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Railway Economy in Construction and Repair.

One of the great mistakes of railway construction has been in consequence of the inordinate desire to open the works at the very earliest day. To such an extent has this hurry been carried, that many of our companies have laid down their iron without proper ballasting, and with the road-bed in such a condition that it could not resist the action of severe rains or frosts of the climate. Then, again, the iron has been taken from the importer without survey or examination, and experience has shown that in many cases much of the iron has had to be taken up and replaced in three or four years, when, in fact, had it been of proper quality, it would have lasted twenty years. Then, again, the sleepers have been laid down without kyanizing or other chemical preparation, to preserve them, and they have to be renewed in from three to five years; when, had they been properly prepared, they would have lasted from fifteen to twenty-five years; and almost every other department of construction has been carried on with like wastefulness and indiscretion. Let our readers examine the annual reports of the different companies they are interested in, or familiar with, particularly with regard to the per centage of annual repairs, and see if our remarks are not well grounded. Owing to this kind of management, many of our railroads are now passing their dividends.—[American Railway Times (Boston).

Beans for Soup.

The use of beans as an article of food, is not so considerable as it should be. Beans are the most nutritious of all kinds of food used by man. Chemical analysis, and the experience of those who make extensive use of them, demonstrate this. To make good bean soup, take one quart of white beans and a shank beef bone and boil all together for two hours, then add salt and pepper for seasoning. The use of bones is not so much esteemed as they should be in food. By boiling them in soup some of the phosphate of lime, which goes to form our bones, is taken up and we thus get a supply of a necessary element for our bodies which cannot be obtained so fully from roasted or fried meat.

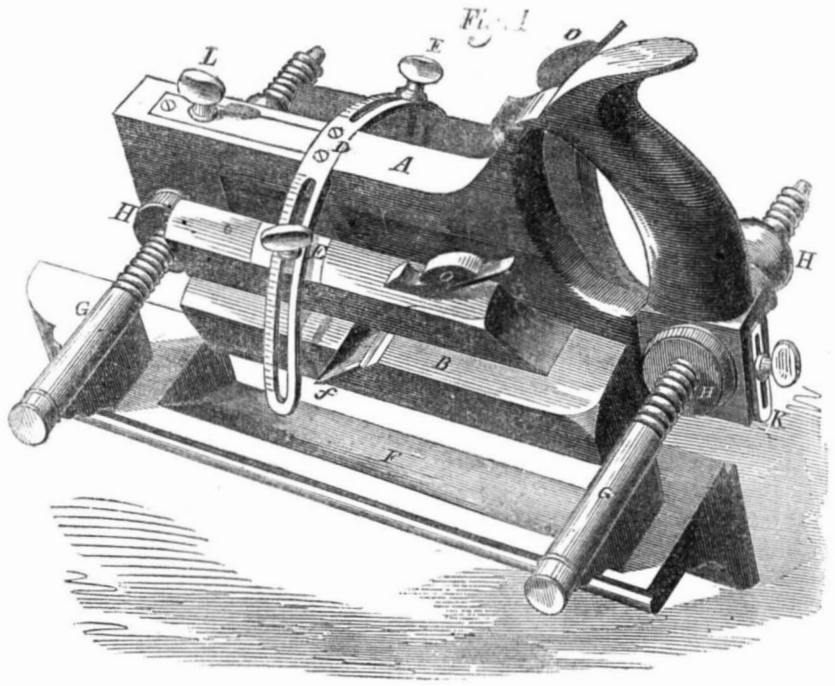
Gold near Reading, Pa.

Dr. C. M. Wetherill has confirmed his former announcement of the discovery of gold near Reading. The gold was discovered by Mr. Philipps, a mining geologist, searching for iron ore, a few miles westward from Reading, and on the farm of Mr. Entlich. also on the western slope of Penn's Mount. It was obtained in washing specimens of ferruginous quartz.

Liberal Employers.

On February 8th, the Directors of the Bank of England notified their employees that they would receive a bonus of ten per cent. on their salaries, in consequence of the present high price of provisions.

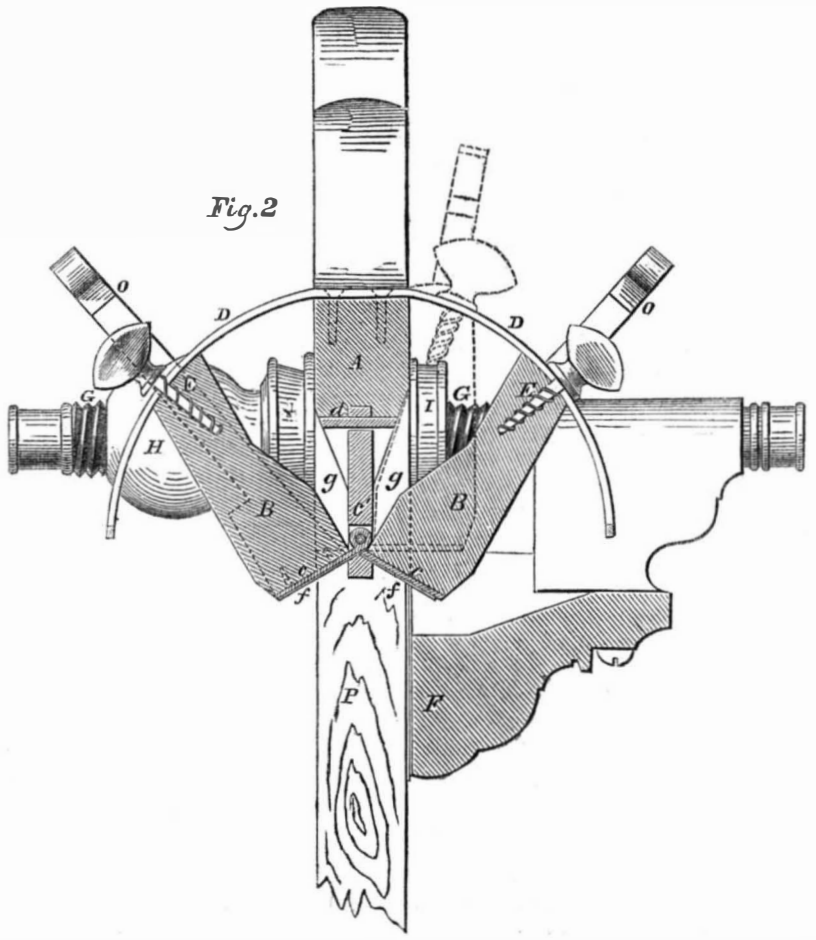
IMPROVED BEVEL PLANES.



The annexed engravings are a perspective view, figure 1, and a transverse section, figure 2, of an improvement in beveling planes, for which a patent was granted to M. J. Wheeler, G. W. Rogers, H. W. Pierce, and M. B. Tidey, of Dundee, N. Y., on the 4th of July last.

The object of this invention is to plane a double bevel, or in other words, to plane two faces at any desired angle to each other, and to a third face. The invention consists in attaching the two cutters, which are to plane the two faces, to two wings which are both hinged or otherwise attached to the body of the plane, so as to swing round a common axis, and each of which is adjustable and capable of being secured in any position independently of the other, so as to bring and set the faces of the cutters at any angle to each other, or to the fence which is employed to guide the plane.

A is the body of the plane; B B are the wings which contain the cutters, *f f*, and are connected to the underside of the body, A, by a three-flanged hinge, *c c c'*, figure 2. One flange, *c'*, of this hinge, is inserted in the body, A, and secured by screws, *d d*. The screws are secured one to each of the faces of the wings, B B, and all are united



by a pin running the whole length of the wings. The wings are shorter than the body, A, and a recess equal in length to the wings, is cut in each side of the latter, to allow them to lay up close to the sides of it, and bring their faces and the edges of their cutters as nearly as is desirable in the same plane. The cutters are of the usual form, and secured in the wings by wedges, O O, in the usual way. The wings swing within a bar, D, which is in the form of part of a circle described from the axis, and are secured in any position by means of set screws, E E, passing through slots, in the bar, D, and screwing into their backs. The upper surface of the bar, D, is graduated in degrees, commencing in both directions from the sides of the body, A, in order to enable the faces of the wings to be set at any desired angle; F is the fence having the screws, G G, firmly attached to it, perpendicularly to its face; said screws pass through holes in the body, and being furnished on one side thereof with a nut, H, and on the other side with a follower, I, to adjust the fence to the body and wings, for the purpose of planing stuff of various widths; K is the depth gauge which is adjusted by means of the screws, L M, for the purpose of enabling the tool to cut to the required depth to perfect the bevel, and no further.

The operation of the plane can be best explained by illustrating the beveling of a door stile on opposite sides of the channel which receives the panel. The stile, P, is represented in figure 2. The fence, F, is adjusted by the screws, G G, to bring the depth of gauge to the proper distance from the side of the stile. The wings are adjusted to set the edges of the cutters at the proper angle to each other and to the face of the stile, and the depth gauge is set to the proper depth. The edge of the stile is then planed down till the depth gauge comes in contact with the bottom of the groove. If it be desired the two sides of the channel may have different bevels, as each wing with its cutter is adjustable independently of the other. By making the edge of the cutters of this plane of proper form, coves, ovolos, ogees, or moldings of any other form may be produced on the edges of the stuff.

More information may be obtained by letter addressed to M. B. Tidey & Co., Dundee, N. Y. The planes are manufactured by this company.

Sugar Manufacture of France.

France is the largest producer of beet sugar in the world. A favorable soil and climate, and a rural and industrious population, contribute to the successful prosecution of the beet sugar manufacture. This manufacture originated during the reign of Napoleon Bonaparte. His continental system raised colonial produce to an almost fabulous price. The high rate of sugars induced many to look around for the means of producing sugar at home, and an impetus was given to the search, by the offer of a magnificent premium by the emperor to the successful discoverer of a permanent home source of supply. Of all the plants tried the beet proved the most promising, but forty years elapsed before the manufacture of beet sugar was enabled to cope successfully with colonial sugars. From France the culture spread through Belgium, Germany, and far into the interior of Russia, and now there is produced of this kind of sugar on the continent of Europe three hundred and sixty millions of pounds, nearly one-half of which is manufactured in France, in three hundred and thirty-four manufactories. In the vicinity of Lille the average yield of the sugar beet is sixteen tuns to the acre, and at Valenciennes nineteen tuns. In some localities twenty-five tuns are produced.

New Potato Digger.

The St. Paul *Daily Times* (Minesota) describes a new machine for digging potatoes, invented by F. Jones, to which the attention of farmers in that region is directed. It is calculated for two horses, and will dig about five acres in a day.

A submarine iron boat has been built in this city in order to go down and secure the treasure said to have been lost with the British frigate *Hussar*, in Hurl Gate.

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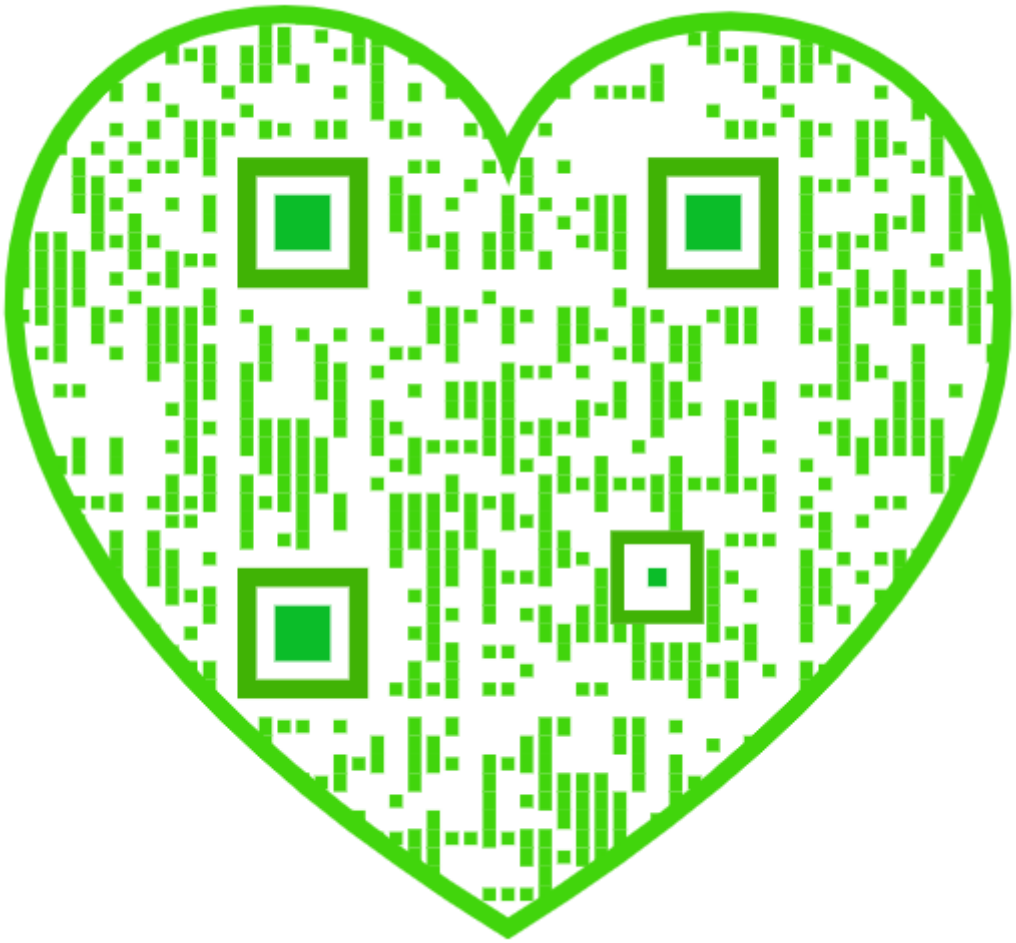

The Art of Dyeing—No. 12.

ADVICE ABOUT INDIGO AND WOAD VATS—There are many receipts which can be followed exactly in the art of dyeing, by persons who are unskilled, but this cannot be done in the management of blue vats. The skill of the eye, which can only be acquired by experience, and likewise that of smelling, are necessary to manage such vats. And as they are very expensive, manufacturers should take heed to employ none but experienced persons to take charge of this branch of dyeing.

Within a few years past, the modes of dyeing Prussian blue on woolen goods in combination with tin and logwood, have been so improved, that such colors have (because they are very durable) superseded indigo colors on different kinds of woolen goods.—Receipts for these we will now present:

PRUSSIAN OR ROYAL BLUE—There are two ways of dyeing dark shades, first by *bottoming*, as it is technically termed, with logwood, and then dyeing with the prussiate of potash, or first dyeing with the prussiate and then topping with the logwood. The latter mode is the best.

For a dark blue, the goods do not require to be perfectly white, as the operation strips off all old colors. To every pound of wool, which must be clean, two ounces of the prussiate of potash is put into the dye kettle along with two ounces of cream of tartar; add nitric and sulphuric acid until the liquor (after the tartar and prussiate is dissolved) tastes like glauber salts. The goods are then entered, if in pieces, they must be well selvedged or winched, and if yarn well turned, and the liquor in the dye kettle gradually brought up to the boiling point. The goods are then taken out and a little more sulphuric acid added. After the goods are boiled for twenty minutes or half an hour, a beautiful and rich sky blue will have been imparted to them. They are then taken out of the dye kettle, washed and hung up for a few moments to drip. Another dye kettle with a small quantity of logwood liquor, (say a pint of strength No. 3 in the hydrometer, for every pound of goods,) should be now boiling, to which add a wine glass full of the muriate of tin, stir well, and enter the goods. The kettle must be kept boiling for half an hour, when it will be found that a deep velvety richness will be imparted to the blue color, and by adding a greater quantity of logwood with a proportional quantity of spirits (muriate of tin) a deep violet color will be the result. If some cochineal is used with logwood, a clear and beautiful crimson tinge is imparted to the goods. This color may almost be considered permanent—it at least occupies more than a middle part in the scale, between the fugitive and permanent. From its exceeding clear and rich appearance, this color on goods has received the name of *royal blue*.

Coarse goods dyed by the above receipt, may be made a very deep blue by the greater quantity of logwood used, and if the goods were first of all prepared with a small quantity of the sulphate of iron—so much the better.

The chemical name of prussiate of potash is ferrocyanide of potash, a yellow salt (K2., Fe.3, N. C.2.) A richer and deeper blue will be given by running the goods through a weak solution of the nitrate of iron, and then washing them prior to operating in the prussiate bath. Hydrochloric or muriatic acid, if used instead of the sulphuric in the boiler, imparts a peculiar purple bloom.

Light blues are dyed without the use of logwood.

By employing about three pounds weight of logwood to the ten pounds of wool, and half a pound of the bichromate of potash—all in the same kettle with the prussiate of potash and the spirits or salts of tin, a deep blue black will be produced resembling that produced in the pastel or indigo vat. It will not, however, stand exposure to the sun like indigo, but in other respects it is nearly as permanent.

For twenty pounds of wool, Smith says, three pounds of the prussiate of potash, and three quarts of nitro muriate of tin spirits are sufficient. These are placed in the dye kettle, the goods entered cold, and the liquor then brought speedily to a boil, and continued boiling for half an hour, when they are lifted, two pints of spirits added, and the boiling continued for some time longer. It must not be forgotten that the logwood is employed to deepen the blue, by simply forming a purple with the logwood and tin spirits. It is a color not difficult to dye by any person.

Photography.

This art has made great advances within the past few years, and it threatens to supersede that of the daguerreotype entirely. The difference between the two consists in the picture being taken on paper by the former, while by the latter it is taken on a prepared plate of metal. A very important patent trial relating to an improved process of photography, lately took place in London, as recorded in the February number of the *Glasgow Practical Mechanics Journal*, between Fox Talbot, plaintiff, and M. Laroche, defendant, for infringement of the plaintiff's patent, he being author of the art, which has been named "Talbotype," in honor of the discoverer. He secured an American patent in 1847, nine years after his first English one was granted, during which period he had made a number of improvements, and obtained three other patents. His first patented process, as then described, was as follows, "Select some of the best writing paper, and wash it on one side with a solution composed of one-hundred grains of crystallized nitrate of silver, dissolved in six ounces of water; then dry it, and dip it into a solution of iodine of potassium, press it between two sheets of blotting paper, and keep it for use. When wanted for pictures, it is washed with gallo-nitrate of silver, and placed in the camera like a daguerreotype plate. On being taken out, it is again washed with gallo-nitrate of silver, and held before a fire, when the image appears; it is then washed with the bromide of potassium to fix it.

M. Laroche set up the defence of non-infringement,—that his process was entirely different; also that Fox Talbot was not the first discoverer of photography. For the latter point of defence, the Rev. J. B. Reed, Vicar of Stow, an excellent practical chemist, gave testimony that he produced such pictures in 1839, by paper prepared with chloride of silver, and an infusion of galls, and that his pictures were exhibited at a soiree of the Royal Society in that year.—He had also used iodide of potassium, but admitted that he did not know how to develope the latent image, and that he learned this afterwards on reading an account of Fox Talbot's discoveries. The new process of M. Laroche was discovered in 1851, by a Mr. Archer, and for the other point of defence, was stated to consist in the use of collodion (gun cotton dissolved in ether,) mixed either with the iodide of potassium or ammonia, then poured upon a plate of glass (on which it forms a thin film,) immersed in a bath of nitrate of silver, and then placed in the camera. When withdrawn, the latent image is developed by pyrogalic acid, or protosulphate of iron, and is fixed with hyposulphate of soda. Some eminent chemists gave testimony that this was merely the Talbotype under a modified form; this was the opinion of Professors Miller, Brande, and Hoffman. On the other hand, Dr. Normandy and Robert Hunt (the latter perhaps the best authority of all) gave evidence that collodion possessed unknown photographic powers, and that pyrogalic acid was more sensitive than the gallic acid of Mr. Talbot. Some pictures were shown taken from living animals when in motion, and a beautiful view of Elsinore, and the three-crown battery of Copenhagen, were taken on board of the war ship *Calliope*, when passing at the rate of eleven knots per hour. This is certainly a great improvement in the art; we have never heard of any thing like it before. The Chief Justice, in summing up the case, stated, it was very evident that Fox Talbot was the first to discover the latent image—that is, although no picture may be seen on the paper when taken from the camera, it exists there, and can be developed—but as this was a philosophical discovery, from its nature, it could not be the subject of a patent which only embraced the means of producing the result. The verdict of the Jury was, that the plaintiff was the first inventor, but that there was no infringement of his patent by the defendant.

This is a peculiar case, and embraces features which, with the information we have presented (easily understood by all,) is of great interest. The whole value of this art depends entirely upon the discovery of the latent image and its developement, and yet it is such a discovery as cannot be protected by either the English or our patent laws. There seems to be a defect in such laws to meet sueh cases, but we really cannot see a remedy that would not be the means of retarding the progress of improvement. In this case it is very evident that the collodion process is a wonderful improvement on the old method, and it appears reasonable that it should not be held in abeyance to the idea of the latent picture being on the paper; all the rest of the process is different. The art of photography is becoming more extended in our city. Beautiful sunlight pictures of large size are now produced by our artists, many of which will compare favorably, by skillful coloring, with fine oil paintings. It is about fifteen years since sunlight painting was discovered, and yet, since that time, its progress has been so great, and its practice so extended, as to reach the ends of the earth, and command the wonder and admiration of all nations.

James Watt Festival.

A festival in honor of the great improver of the steam engine, was lately held at Dundee, Scotland. In a speech made on the occasion by a Mr. Smith, we find it stated that Watt was a universal genius; that at the age of 19 years he was a chemist, botanist, a natural philosopher, a student of medicine, and a mechanic of all kinds of work. He was a man of great modesty, gentleness, and kindness, yet possessed of indomitable perseverance. Although sickly when a boy, he lived to the age of 84, and went on storing up knowledge until the year of his death. He acquired several languages, was skilled in poetry, music, and architecture, and deeply read in German metaphysics. He certainly was the greatest mechanician that ever lived, and stands among mechanics, like Shakspeare among poets. His inventions have done more for elevating the working men to a nearer level with the aristocrats of Europe, than all the enactments of Parliaments. It has also been the means of rolling on the period of national brotherhoods, for every improvement that serves to facilitate travel, and promote commerce, serves to break down narrow local distinctions. His memory in America is revered; he is a noble representative of the mechanical classes. He built the engine of our first successful steamboat—the Clermont—for Robert Fulton, and he is held to be the father of modern mechanical engineering.

Milk Sickness.

Dr. Hall, in the last number of his *Journal of Health*, states that milk sickness is unknown in families where the cows are well fed. Such cows, he asserts, never give *milk sickness*. He has revelled in the use of the most luscious milk for weeks in perfect fearlessness of this sickness, while several persons died of it on the next farm.

Some persons have attributed this disease to a vegetable which the cows eat, but he tells our western farmers that if they feed their cows well they will never be troubled with the milk sickness.

Boston Coal Dealers.

In a debate which recently took place in the House of Assembly, Boston, on the bill relative to the sale of coal, there was some developements made with regard to the practice of some coal dealers, of a rather uncomplimentary character. One gentleman stated, that while certain carts were being loaded with coal at the yard of a dealer in Lowell, he saw six pails of water thrown upon each load before it was weighed and sent off to the buyers. Another gentleman stated that a buyer saw a dealer shovel off coal from his cart after he had weighed it. Several other cases of dishonest dealing in coal were stated as reasons for legislation to protect coal buyers.

All the dishonest coal dealers are not confined to Lowell; those in New York know a thing or two in that line also.

Life Boats.

The improved life boat for which a patent has just been granted to John Allen, of this city, (the claims for which are on another column) consists of a vessel composed of india rubber or some flexible material secured to a frame of such construction as to keep it properly extended, the vessel having the quality of being entirely closed in at pleasure, so as to exclude the water and protect the passengers. It is furnished with an inlet and outlet valve, and suitable pipes, through which pure air is admitted, and foul air discharged simply by the water acting upon its flexible sides to reduce and enlarge its inner capacity, and make it operate like a bellows pump. The principal portion of the frame consists of a central shaft composed of two metal tubes connected by a right and left-handed screw, by which it is readily extended and contracted lengthwise. These tubes have at their furthest ends disks, to which are attached a number of ribs of some flexible wood, each rib extending from disk to disk, and connected thereto with hinges. The covering is placed on these ribs and secured by plates or buttons. These ribs can be made to lie parallel with the shaft, or curved with it by simply turning a screw, and thus the covering is extended or distended in a very simple and convenient manner.

Ship Building in the United States.

The Philadelphia *Ledger* reasonably asserts that the ship building interests are like a barometer, indicating years of prosperity and adversity in commerce. Thus it says:

"During the forty years between 1815 and 1855, the number of vessels built in the United States, including canal boats, steamers, sloops, schooners, brigs, and ships, and, indeed, all descriptions excepting those constructed for the federal government, was thirty-nine thousand and ninety-two. The tunnage of these vessels exceeded five millions and a-half. The prosperity of this branch of industry kept pace with the fluctuations of the general prosperity, the periods of momentary depression witnessing the most terrible revulsions. It is only necessary, indeed, to consult the statistics of American ship building to tell when expansion was at its hight, and when a financial crisis prevailed. In 1832 and '33, over three hundred thousand tuns were built; in 1840 and '41, there was a decline of nearly thirty per cent. The year 1853 and the five preceeding years witnessed an increased development of this business; but for the last twelve months there has been a great decline. In 1853 and '54, in fact, the tunnage launched amounted to one-seventh of the whole tunnage built since 1815. The greatest ship-building State is Maine, which, in 1853, constructed 118,916 of the 425,572 tuns built. New York comes second, Massachusetts third, and Pennsylvania fourth.

Highths of Perpetual Snow in the Alps.

M. Roret has deduced from observations during the years 1851, 1853, and 1854, in the French Alps, that the hight of perpetual snow is 3,400 meters, or 700 meters above the hight stated in many works in physics and meteorology.

Fire Engines—The Tables Turned.

In 1654, the first fire engine ever made in this country was manufactured in Lynn, by a man named Jenks, for the use of the town of Boston. In 1818, a fire engine was made in the city of Boston for the city of Cincinnati. In 1855, the city of Cincinnati furnishes a steam fire engine for the city of Boston.

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(For the Scientific American.)

Hydrodynamics---Water Wheels.

On page 171, present volume, James Sloan propounds some questions, premised, however, with the assertion "that the science of hydrodynamics is not understood." The science may not be understood by some who make pretensions to it; but others are vain enough to suppose that some do understand it, and imagine that the structure rests on a few plain and simple principles, which govern matter while under the influence of force, and are well known to all mechanicians.

All the phenomena of water motors arise from two well-known principles, viz., when force acts on matter, if not obstructed, it will move in a direct line forever, with a velocity proportional to the force, and inversely as the mass, and will take a force to arrest its motion equal to that which gave it. From these two principles flow all that is known in mechanics. The heavenly bodies —planets, satelites, comets, and all—are governed by the same laws that regulate the motion of the water wheel. Mechanicians, however, consider that the friction arising from the passing of water through the complicated structures, of all the various water wheels, is as much out of their province as the calculation of friction in any other complicated machine—the steam passing from the boiler to the cylinder, and the piston, for instance. This branch belongs to experimenters. Astronomers have, for convenience, applied the term centrifugal force to the tendency that projectiles have to continue in a direct line, which has induced many to suppose that it was a real force, and that it, in some mysterious way, affected the action of water on wheels. But to the questions:—

First, By the following formula, the upward pressure may be determined, viz.,

$$w=d\ h\ (v^2-y^2)\times 49{\cdot}088\ ;$$

in which w=the upward pressure; d=the diameter of the helical sluice where it is in contact with the wheel, or the wheel itself, where the sluice that directs the water on it joins it; h= the highth of head, measured from the point where the water escapes, or if an air tight wheel case be used, from the top of the tail water to the top of the head; v= the quantity of water discharged in a given time by the helical sluice, with the wheel removed, considered as unity; and y= the proportional quantity discharged by the wheel when in operation, working at a speed to produce a maximum effect. 49·088= cylindrical feet of water.

EXAMPLE—A water wheel, with a helical sluice, 2·86 feet diameter, working under a head of 14·75 feet, discharges when at work 17·42 cubic feet of water per second; but when the wheel is removed the helical sluice discharges 24·6 feet in the same time. What is the upward pressure against the wheel?

Here, v=24·6, v^2=605·16.

y=17·42, y^2=302·76

v^2-y^2=302·40=4997

And, $2{\cdot}86\times 14{\cdot}76\times{\cdot}4997\times 49.088=1034{\cdot}+$lb. =the necessary weight of the wheel and shaft to balance the upward pressure of the water.

The function, (v^2-y^2) is based on the principle that the velocity, and consequently the quantity of water discharged is proportional to the square root of the head necessary to generate the velocity. v= the velocity from under the whole head, consequently, v^2= the whole pressure, and v^2-y^2= the pressure after passing through the sluice. v and y may be obtained, approximately, by measuring the area of the inlet and outlet—sluice and issues—and making y= area of the issues of the wheel, and $v=\sqrt{y^2+\text{area of the sluice}^2}$.

But the experienced millwright will, if he understands "hydrodynamics," so construct his machine that $v^2-y^2={\cdot}5$, or very nearly so; in which case it will produce a maximum effect, but in no other. Any variation in the velocity of the wheel will affect the relations between v and y, and consequently the pressure, and the effect of the machine.

The second question is not clearly presented.

What is meant by "a line parallel with a secant." A tangent may be parallel with a secant, if removed 90° from it.

The third is answered negatively, by the solution of the first. J. B. CONGER.

Jackson, Tenn., Feb. 19, 1855.

[Mr. Sloan is a practical millwright, and has long been engaged in putting up wheels and erecting mills. Mr. Conger is an experienced millwright also, and has expressed our views exactly in relation to the science of hydrodynamics.

Proposed Amendment in Patent Law.

MESSRS. EDITORS—In the first place permit me to express my thanks for your faithful discharge of duty as sentinel on the watch-tower of liberty and equal rights.

Your last number apprises us of a new attack of the aristocracy upon the privileges of the people. If a rich dealer in patents should wish to make a monopoly of invention, and exclude all genius from competition, except among a privileged few, he could not devise a more effectual scheme than that proposed by Senator James. With his motives I have nothing to do, but such is the character of his bill. I have named *aristocracy* as the principle of that bill, and I would remark, that if this country is to be degraded, it may not improbably be through that evil principle. There is, indeed, danger on the other hand from relaxation of salutary law. There may be unprincipled democracy as well as unprincipled aristocracy. But is it too much to expect of our well-paid legislators that they should protect us from both these upper and nether mill-stones.

The greatest enemies of our patent laws are a few purse-proud patentees, or assignees of patentees. Their policy is exactly that of the celebrated devil, who, having mounted the ladder himself, devised the plan of kicking it over.

If Senator James' bill becomes a law, every man in moderate circumstances must at once abandon all hopes of profiting by his inventive genius. That gift of God becomes to him of no value, but rather a curse.

EQUAL RIGHTS.

Brunswick, Me.

Circular Saws.

MESSRS. EDITORS—Very many saws are permanently injured by the heating of the arbor; the middle of the saw becomes expanded by the heat, and working it in this state inevitably strains it. This is a very common error, and as it generally occurs a little at a time, often escapes observation.—The mere heating of the saw, even to blueing it, does not start the temper as many suppose, but makes it spring temper; it should therefore be heated all over or not at all. Saws of a uniform thickness are less liable to strain. The thin places of saws are those parts that buckle first, and from the first are the cause of vibration; however well a circular saw may be made in other respects, it must be ground even to work well. The collars on the arbor should be concaved a little, because a well-ground saw gradually thickens from the teeth to the hole.

A SAW MAKER.

Boston, Mass.

Petrifactions.

MESSRS. EDITORS—In glancing over an old file of the *Marshall* (Mich.) *Statesman*, my eye caught a paragraph headed "Petrified Corpse in Wisconsin." I take the liberty of transcribing it for your benefit, inasmuch as it supports a remark of yours in an article upon that subject in No. 24. The cool and reckless positiveness with which some scientific men will assert periods of forty thousand, and a hundred thousand, or even a million of years to account for certain changes, is as amusing as it is alarming.

The paragraph in question appeared in the *Statesman* of May 7, 1851, credited to the Detroit *Advertiser*, whose authority was the Fond Du Lac *Journal*, and is as follows, viz: "On the 20th of August, 1847, Mrs. Phelps, wife of our informant, Abner P. Phelps, died, and was buried at Oak Grove, in Dodge Co. On the 11th of April inst., she was taken up to be removed to Strong's Landing. The coffin was found to be very heavy, and the body to retain its features and proportions. After its removal to Strong's Landing, a distance of some 45 miles, the body was examined, and found to be wholly petrified, converted to a substance resembling a light colored stone. Upon trial, edge tools made no more impression upon it than upon marble. In striking upon the body with metal, a hollow singing sound was produced. The disease by which she came to her death was chill fever and dropsy. When the body was buried it was very much swollen. The ground in which she had been buried was a yellowish loam, and the body lay about three feet above the lime rock."

The above particulars are so explicit that the facts could be easily verified if called in question. J. W. BANCROFT.

Elmira, Eric Co., N. Y., March 7th, 1855.

MESSRS. EDITORS—In No. 25, SCIENTIFIC AMERICAN, there is an article on the subject of petrifaction, wherein is noticed the case of several petrified bodies, and you say "you have heard of such cases before;" let me give you a case of my own personal knowledge:

A few years ago a lady died in the neighborhood of Felicity, in this County, and was buried in the orchard on the farm. About four years, after she was disintered, for the purpose of removal to a public graveyard, and was found to be completely petrified, being as solid as stone and fully as heavy. Every feature was distinct and perfect. Facts like this are enough to disprove the false theory of Gliddon and Newton. The name of this lady was Carley. Her family are living in the same neighborhood yet, and can testify as to the truth of these statements.

JAS. M. GOODWIN.

Bethel, Clermont Co., Ohio.

Materials in their Invisible State.

If a piece of silver be put into nitric acid, a clear and colorless liquid, it is rapidly dissolved, and vanishes from the sight. The solution of silver may be mixed with water, and to appearance, no effect whatever is produced; thus in a pail of water we dissolve and render invisible more than ten pounds worth of silver, not a particle of which can be seen. Not only silver, lead, and iron, but every other metal can be treated in the same way, with similar results. When charcoal is burned, when candles are burned, when paper is burned, these substances all disappear, and become invisible. In fact, every material which is visible can, by certain treatment, be rendered invisible. Matter which in one condition is perfectly opaque, and will not admit the least ray of light to pass through it, will, in another form, become quite transparent. The cause of this wonderful effect of the condition of matter is utterly inexplicable. Philosophers do not even broach theories upon the subject, much less do they endeavor to explain it. The substances dissolved in water or burned in the air, are not, however, destroyed or lost; by certain well-known means they can be recovered, and again be rendered visible, some in exactly the same state as they were before their invisibility; others, though not in the same state, can be shown in their elementary condition; and thus it can be proved, that matter having once existed, never ceases to exist, although it can change its condition like the caterpillar, which becomes a chrysalis, and then a gorgeous butterfly. If a pail-full of the solution of silver be cast into the sea, it is apparently lost by its dispersion in the mighty ocean; but it nevertheless continues to exist. So when a bushel of charcoal is burned in a stove it disappears in consequence of the gas produced being mixed with the vast atmosphere; but yet the charcoal is still in the air. On the brightest and sunniest day, when every object can be distinctly seen above the horizon, hundreds of tuns of charcoal in an invisible condition pervade the air. Glass is a beautiful illustration of the transparency of a compound, which in truth is nothing but a mixture of the rust of three metals. This power of matter to change its conditions from solid opacity to limpid transparency, causes some rather puzzling phenomena. Substances increase in weight without any apparent cause; for instance, a plant goes on increasing in weight a hundred-fold for every atom that is missing from the earth in which it is growing. Now the simple explanation of this is that the leaves of plants have the power of withdrawing the invisible charcoal from the atmosphere, and restoring it to its visible state in some shape or other. The lungs of animals and a smokeless furnace change matter from its visible to its invisible state. The gills of fishes and the leaves of plants reverse this operation, rendering invisible or gaseous matter visible. Thus the balance in nature is maintained, although the continual change has been going on long prior to the creation of the "extinct animals."

SEPTIMUS PIESSE.

Transporting Eggs of Fishes.

In the last sitting of the French Societe Zoologique d'Acclimation, M. Millet detailed a series of experiments he had lately made in conveying fecundated eggs. The result was, he said, that the eggs, when wrapped up in wet cloths and placed in boxes with moss, to prevent them from becoming dry and being jolted, may safely be conveyed not only during twenty or thirty, but for even more than sixty days, either by water, railway, or diligence. He added, that he had now in his possession eggs about to be hatched, which have been brought from the most distant parts of Scotland and Germany, and even from America. M. Millet stated a fact which was much more curious—namely, that fecundated eggs of different descriptions of salmon and trout do not perish, even when the cloths and moss in which they are wrapped become frozen. "He had even been able," he said, "to observe, by means of a microscope, that a fish just issuing from the egg, and of which the heart was seen to beat, was not inconvenienced by being completely frozen up. This he explained by the fact that the animal heat of the fish, even in the embryo state, is sufficient to preserve around it a certain quantity of moisture."

This is a very important addition to the science of zoology.

Patent Sawing Machinery.

In reference to the improved sawing machinery of Piney Youngs, on another page, we would inform our readers that there are three of these machines in operation in Wisconsin. Each has cut 15,000 feet—superficial measure—of siding in ten hours. One of them has sawed six boards fourteen feet long and six inches wide in one minute, without extra exertion. They operate well, and—as we have been told—give great satisfaction.

Color of the Eyes.

That the color of the eyes should affect their strength may seem strange; yet that such is the case need not at this time of day to be proved; and those whose eyes are brown or dark colored should be informed that they are weaker and more susceptible of injury, from various causes, than gray or blue eyes. Light blue eyes are *cæteris paribus*, generally the most powerful, and next to those are gray. The lighter the pupil the greater and longer-continued is the degree of tension the eye can sustain.—[Hall's Journal of Health.

Morse's telegraph is the one which is to be used in the Crimea, to connect with the present European lines. They will find it to be the most simple.

Goater, the London lock-picker, has been fined £30 for picking a lock unfairly, and circulating reports injurious to Messrs. Parnell & Puckridge.

115,300 tuns of iron were imported to the United States from Scotland, last year. Canada imported from the same place 31,200 tuns.

A great lithographic work is about to be done in Berlin, Prussia, for a London house. It will take 40 different stones with their combined impressions to complete the work, viz., the ceiling of the Cistine Chapel, by Michael Angelo.

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New Inventions.

Improvements in Sawing Machinery.

The annexed engravings are views of valuable improvements in machinery for sawing, for which a patent was granted to Piney Youngs, of Milwaukie, Wis., on the 30th of January last, one half having been assigned to J. B. Smith, of the same place.

Figure 1 is a plan view of the machine; figure 2 is a section plan view of half of figure 1, with the carriage on which the timber is placed, removed; figure 3 is a detached view of one of the toothed wheels, pinions, levers, and clutch by which the timber is properly set to the saw. The same letters on all the figures, indicate like parts.

These improvements relate to a new machine for sawing timber or boards direct from the log, or for re-sawing timber, and consists, first, in the employment or use of saw guides (two pairs) arranged upon or attached to vibrating levers, one pair at each end, so that the guides may be brought in contact with the saw (which is circular) at either end, and so operating that when one pair of guides is brought in contact with the sides of the saw, the guides at the opposite ends of the levers will be thrown out from the saw. By this device or arrangement the saw is enabled to cut at both ends, or during both movements of the carriage, and is properly guided at all times.

Second, it consists in a combination of parts forming a device for properly setting the timber or logs to the saw.

A represents a frame-work to support the working parts; B is a circular saw hung upon a shaft, C, which works in suitable bearings, *a a*, on two top sills or beams, *b b'*, of the frame work. The shaft, C, is provided with journals, *a'*, somewhat longer than the breadth of the bearings, *a a*, to give the shaft, C, a certain degree of play, and thus allow the saw a lateral movement, so that it may conform to any moderate deviation from a straight cut, and prevent bending or an undue bearing against the kerf. D D are levers secured at their centers by pivots, *c*, to top sides, *b' d*, of the frame-work, A, a lever being at each side of the saw. The ends of these levers are curved or bent towards the saw, and each lever is provided at both ends with a guide, which is merely a pin, *e*, made of wood or other suitable material, the pin passing horizontally through an upright projection, *f*, on the lever. It will be seen, therefore, that there are two guides at each end of the saw, the saw being between them. At one end of the levers, D D, are attached rods, *g g*, one to each lever, and the outer ends of these rods have pins, *h h*, upon them, which fit in curved slots in a sliding plate, *j*, which works on one of the top sills, *k*, of the frame-work, A. The sliding plate, *j*, is mostly covered by a top plate, *l*, which is provided with guide slots, *m m*, in which the upper ends of the pins, *h h*, fit; E is a shaft at one end of the frame-work, A. This shaft has a cone of pulleys, F, at one end, around which a belt, *n*, passes, said belt also passing around a cone of pulleys, G, at one end of the saw shaft, C. The shaft, E, has also a drum, H, upon it, around which two belts, *o p*, pass, one of said belts, *p*, being a cross belt. I is a shaft running in suitable bearings, having a fast or working pulley, J, upon it, and two idle or loose pulleys, K K, one at each side of the pulley, J. The belts, *o p*, above mentioned, work alternately over the fast and loose pulleys on the shaft, I. On the upper end of an upright rod there is a lever, *r*, the outer end of which is secured by a pivot, to one end of an arm, *b*, the opposite end of said arm being attached by a pivot, *u*, to a button, O, which is secured by a pivot, *v*, to the upper surface of the sill, *k*. The sliding plate, *j*, is also connected to button, O, by an arm, *z'*, through which the point, *u*, also passes. The outer end of the button, O, is provided with prongs or projections, *w w*, between which a slide, *x*, works. The outer end of the slide, *x*, projects some distance beyond the sill, *k*. On the shaft, I, on which the fast and loose pulleys, J K K, are placed, is hung a pinion, P, which gears into a toothed wheel, Q, on a shaft, R, said shaft, R, also having a pinion, S, upon it, which pinion gears into a toothed wheel, T, on a shaft, U. The toothed wheel, T, gears into a rack, V, which is on the underside of a carriage, W, said carriage running on ways, *y y*, on the upper surfaces of the sills, *d k*. The rack, V, is shown, by dotted lines. On the carriage, W, are placed two screw shafts, *z z*, cut with threads reverse to each other, and having nuts, *c'*, on them, which pass into or are attached to a bar, X, on the carriage, said bar being provided with dogs, *y y*, one at each end, between which the timber or log to be sawed is firmly held. The timber or log is shown by dotted lines in figure 1, and designated by Z. On the outer ends of the screw shafts, *z z*, are hung bevelled wheels, *d' d'*, one on each, said beveled wheels gear into beveled pinions, *e' e'*, one at each end of a shaft, *f'*, which works in suitable bearings, *g'*, attached to the side piece of the carriage, W. There are also on the outer ends of the screw shafts, *z z*, small pinions, *h' h'*, which gear into toothed wheels, A' A', placed loosely on shafts, B' B', on the carriage W. The shafts, B' B', work in suitable bearings, *i' i'*, on the carriage, and are so arranged as to allow a lateral movement or vibration. Each shaft, B', has a spiral spring, *j'*, around it, which is confined between a stop, *k'*, on the shaft, and the outer side piece of the carriage. On the outer end of each shaft, B', and between the outer surface of the side piece of the carriage

PATENT SAWING MACHINERY.

Fig. 1

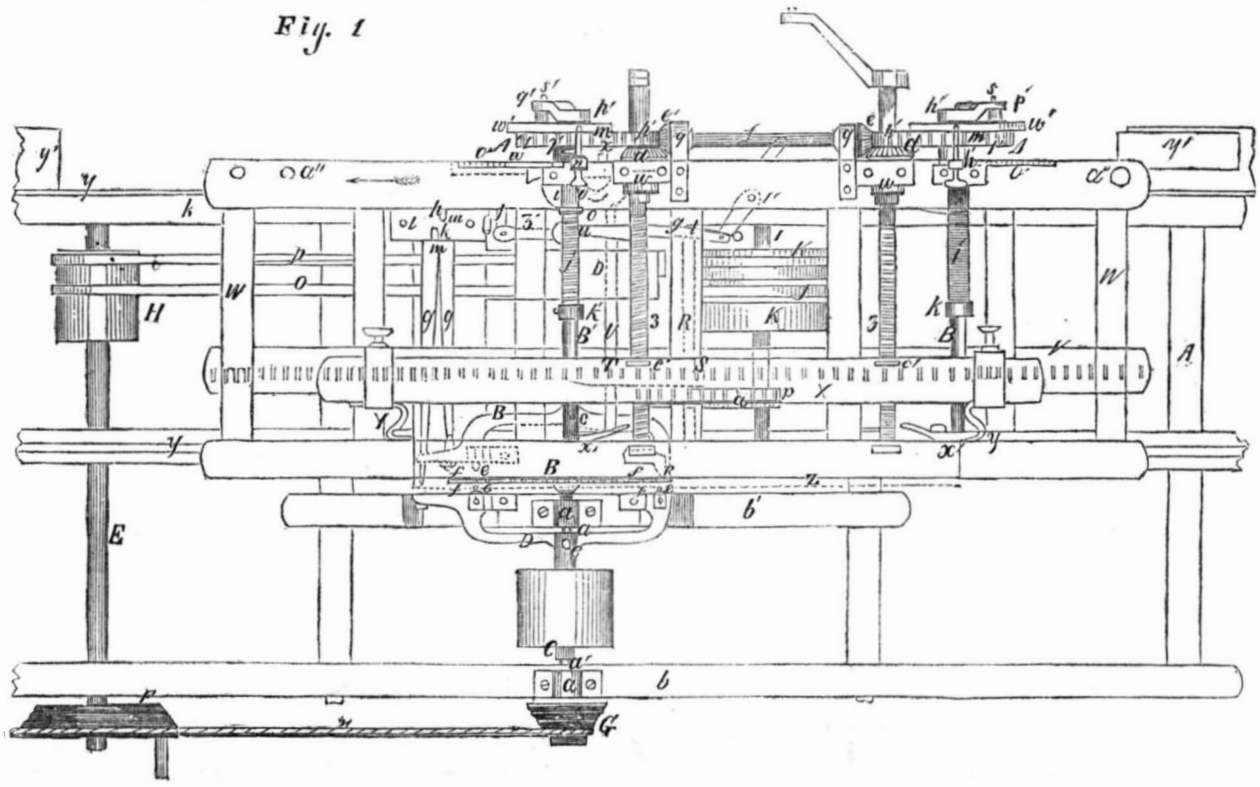


Fig 2

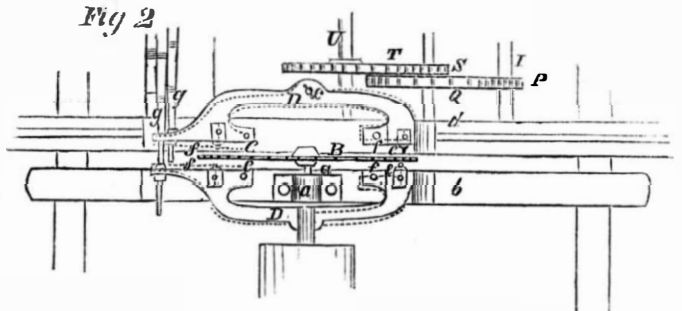
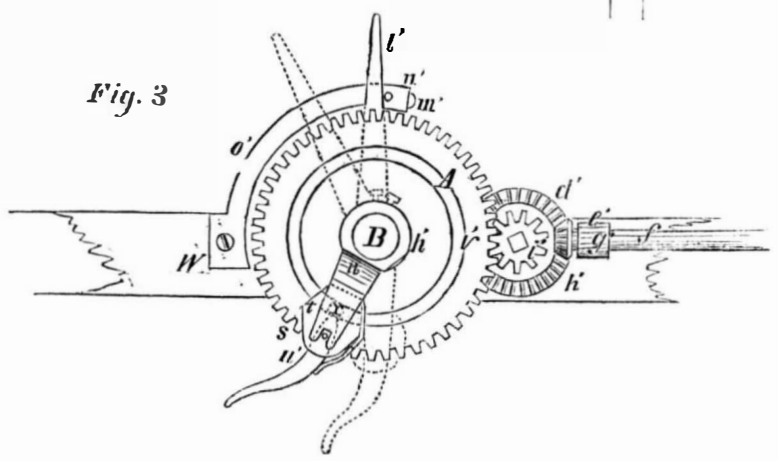


Fig. 3



and the toothed wheel, A', there is secured a lever or arm, *l'*. The upper ends of these arms bear against pins, *m' m'*, which are attached to slides, *n' n'*, which work on segments, *o' o'*, attached to the outer side piece of the carriage, W. The spiral springs, *j' j'*, keep the arms or levers, *l' l'*, against the pins, *m' m'*. On the extreme end of each shaft, B', there is secured a collar, *p'*, having an arm, *q'*, provided with a slot at its lower end, in which slot a pin, *s'*, is attached to the outer surface of a small plate; this plate has a projection on its inner face, which fits over a circular ledge or projection, *v'*, on the outer face of the toothed wheel, A', and directly below the projection there is a pawl, the upper end or corner of which bears against the outer edge of the ledge or projection on the toothed wheel, when said pawl is pressed in the proper direction. A small lever, *x'*, is attached to the inner end of each shaft, B', as shown in figure 1, the use of which lever will be shown hereafter. On the outer surface of the sill piece, *k*, there are two stops, *y' y'*, one at each end.

Operation—The log or timber, Z, to be sawed is firmly secured between the dogs, *y y*, on the bar, X, and motion is given to the saw shaft, C; the saw, B, and shaft, E, are mode to rotate, and the carriage, W, moves in the direction indicated by the arrow, figure 1; the belt, *o*, being over the fast or working pulley, J, on the shaft, I, and driving the carriage while moving in the direction as above indicated. When the log or timber, Z, has passed the saw, B, the lower end of the pawl, *w'*, striks against the stop, *y'*, and the upper end of said pawl clutches the ledge or projection, *v'*, on the face of the toothed wheel, A', which is consequently turned, as is also the opposite wheel, in consequence of the connection formed between them by the shaft, *f'*, and gearing *v' e' h'*. The screw shafts, *z z*, are also turned, and the bar, X, and log or timber, Z, is moved or set to the saw at a distance corresponding to the distance the toothed wheels, A' A', were moved. A pin, *a''*, in the carriage, now acts against the slide, *x*, and the belt shipper is moved, and the belt thrown off the working or fast pulley, J, and one of the loose pulleys K, the cross belt, *p*, being at the same time thrown on the fast or working pulley, J, and the movement of the carriage is reversed. The slide, *x*, when moved, acts against the button, O, and the belt shipper being connected to the button is operated accordingly. The position of the rods, *g g*, is also changed at the same movement, as the sliding plate, *j'*, is connected to the button by the arm, *z'*, and the levers, D D, are shifted or changed, and the guides which were previously in contact with the saw, are thrown out from it, and the opposite pair brought in contact with it at its opposite end, one pair of guides being at all times against the cutting edge of the saw. To prevent the dogs, *y y*, from coming in contact with the saw, the levers, *x' x'*, are attached to the shafts, B' B', so that the bar, X, will act against them and force outward the shafts, B' B', and throw the pawls, *w' w'*, beyond the stops, *y' y'*. By this precaution the bar is prevented from being set too close to the saw, and the attendant then "gigs" back the bar by turning one of the screw shafts, *z*, with the aid of a crank.

By this invention the saw is made to cut while the carriage is moving either way.

The whole apparatus or device is also self-acting, the log or timber being set to the saw, and the motion of the carriage reversed without any extraneous aid or power being applied. The guides are also operated simultaneously with the belt shipper, so that a pair of guides is always in contact with the cutting edge of the saw when cutting at either end. The log or timber may also be set at any required distance towards the saw so as to saw stuff of any required thickness by merely altering the position of the slides, *n'*, on the segments, which will cause the pawls, *w' w'*, to be adjusted so as to be moved a greater or less distance while acted upon by the stops, *y' y'*, and consequently the toothed wheels, A' A', will be moved around a greater or less distance.

More information may be obtained by letter addressed to J. B. Smith, of Milwaukie.

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Scientific American.

NEW YORK, MARCH 17, 1855.

India Rubber Forever.

In the United States Circuit Court, Providence, R. I., a very important case was decided on the 7th inst. It was that of the old fight between Horace H. Day, now the owner of the extended Chaffee patent, and some of the manufacturers of india rubber goods who had licenses and worked under the patent, before it was extended. In this case H. H. Day was the plaintiff, the defendant was Isaac Hartshorn. This was the second trial, or rather a continued trial between the parties. The case was first brought before the Circuit Court in this city (New York) last summer, and abruptly terminated by the sudden decease of one of the jury. The scene was then changed to Providence, R. I., where Chaffee resides, and the trial commenced on the 23rd of January last. As in the trial in this city, one of the jury in Providence was also taken sick, but both parties agreed to proceed with eleven jurors. The affair has been a long one, occupying no less than forty-two days. This shows what great and vital interests were concerned, and what capital was at stake on the issue.

The action was one for damages, for infringement of the Chaffee patent, by defendants. The main questions raised by the defence were, whether the extended Chaffee patent, and the title of Day to it, were valid; and, even if this were so, the defendants had a right to manufacture under a license from an agent of Chaffee. These are the real points, we have been informed; and the accounts we have received of the result is, that the verdict was general on all these questions, and the damages awarded amounted to $4000.

It was thought by some in this city interested on the side of the defendants, that the jury would not be able to agree; the decision will no doubt greatly surprise them.

Throughout this great india rubber battle, H. H. Day has fought under the motto "don't give up the ship," and he has at last succeeded, after many ups and downs, in obtaining what Goodyear and Judson once obtained over him—a victory.

The extension of Chaffee's patent by Mr. Ewbank, was keenly opposed by Mr. Day, who then thought the extension invalid, but he afterwards purchased it, and now has received a verdict in its favor. The validity of a patent, however, is not final with a jury when it relates to a question of law; that is something which can only be finally decided by the United States Supreme Court. This case exhibits a curious phase of fortune in the inverted position of the parties, as they stood when the eloquence of Webster and Choate attracted crowds to Trenton, N. J., in this very month—March—1852. But, knowing, as we do, the tough character of india rubber, we are not disposed to believe the question settled between the parties. We are much mistaken if it cannot and will not stand to be drawn out "a little longer." It is too excellent a material for the lawyers to pull at, to be "given up so."

Congress has Adjourned.

This announcement will thrill with joy the entire population of this country who are in any way concerned in the welfare of the Republic. That miserable abortion, the "New Patent Bill," has been strangled in its birth, not one of its advocates could blow life into its nostrils. The monstrosity is happily defunct, and must in our opinion "sleep the sleep that knows no waking." It never had virtue enough to stand up for a single blow from any Senator or Representative at all acquainted with the wants of inventors or of the public—to whose interests genius is always devoted. There is scarcely one subject of legislation upon which more care and intellect has been expended, outside of Congress, than upon the patent system. Wise lawyers and practical attorneys have gone over the whole field with much faithfulness, and have besought Congress to heed their reasons, and adopt their suggestions, but all to no purpose. Legislators have been bent on destroying the whole system by "substitutes" which in effect annihilated every reasonable hope of the inventor. Legislation upon this subject reminds us of a jail-building story which we once heard:—Somewhere in England it was proposed to build a new jail upon the ground occupied by the old one; this proposition met with favor and passed. It was then voted that the new jail should be constructed out of the materials of the old one, so far as they would go; and lastly, it was voted that the old jail should be permitted to stand until the new one was erected.

This fairly illustrates the whole course of patent law legislation in this country since 1836. It has commenced with flowery promises, and ended in mud. Let us rejoice that good sometimes comes from circumstances where we least expect it.

It is "glory enough for one day" that common sense, in this instance, has not been ravished by the Solons of the American Congress.

Agriculture for 1855.

We believe there never were better prospects for our farmers to use every effort in raising a large crop than there are at present. This war in Europe will prevent the cultivation of the soil in a number of extensive and fertile districts which, heretofore have raised a large amount of surplus products. This will open a gap for our farmers to fill up.—Corn is becoming more an article of food in Europe every year. Three times the quantity was exported in 1854 that there was in the preceding year. As it is the most important grain crop in our country, we advise a still more extended cultivation of it. Potatoes seem to have become one of the most fallacious crops. Farmers should not trust to them, but sow and plant other crops, and depend on them as if not a potato were to be raised. For the past ten years, most of the potatoes raised have rotted during winter; they seem to have lost the quality of preservation which they once possessed. In a few years more, perhaps this disease will wear out. Farmers should raise more oats and barley than they have hitherto done. The former crop in the Northern States is a certain one. Beans should also be more extensively cultivated, so that we may have abundant crops of many kinds. Rice is a standing crop; its cultivation seems to be more carefully attended to, and better understood by planters than the cultivation of either wheat or corn.

A Propeller to go dead against the Wind.

Our readers will remember, that on page 156 we published the illustrated description of James Curtis' windmill, and at the end of it, said, "Mr. Curtis intends to try this wheel on a propeller, so as to see what wind can do with his sails in moving a vessel directly against itself (the wind)." On page 187, we published the letter of Mr. Osborn, of Albany, N. Y., respecting the impossibility of the windmill doing this, and said, that "the windmill could not propel a vessel directly against the power that drives it."

We have received a letter from Mr. Curtis in which he disclaims having ever made such a statement to us. He says, the language used by him was, "he was going to try it on a vessel to work a propeller, and he could see no reason why it will not propel a vessel against *nearly* a head wind without tacking."

The way Mr. Curtis places the word *nearly* in the sentence, led us to understand him differently. The wind is not a head wind, but *nearly* a head wind, which some schooners we know work against now without tacking. He says, "I do not wish it to be understood that I am a man so utterly ignorant of the laws of mechanics as to think it possible to catch the steam as it issues from a locomotive and place it back in the boiler, and make it do its work over again, without a loss of power; or that a man can get into a basket and carry himself about." We assure Mr. Curtis that some persons think he can, but we publish his correction at his request.

We have two letters before us, one from Daniel Lake, of Smith's Landing, Atlantic Co., N. J., and the other from S. Harper, of Cooperstown, N. Y., who assert that a windmill can propel a vessel against the wind.—We also have had letters from other correspondents beside these, who maintained the same views, so if Mr. Curtis should, on further examination, be led to change his opinions, he will have not a few to take sides with him.

Improved Mill Spindle.

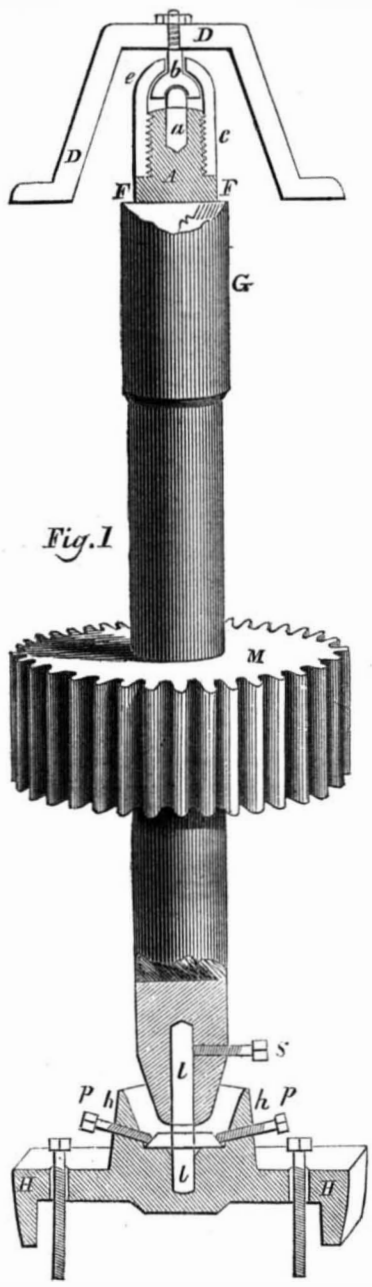

Fig. 1

The annexed figure is a perspective view of an improvement in mill spindles for hanging small stones, for which a patent was granted to Wm. H. Naracon, of Auburn, N. Y., June, 1852. In order to show clearly the connecting sockets, the upper and lower ends of the spindle are represented as if divided, and the interior of the spindle exposed.

G is the spindle, and D is the bail, A is the end of the spindle, with a thread cut around the outside down to the shoulder. *a* is the steel point in the end of the spindle on which the upper stone hangs. *b* is a steel socket with the bottom turned out, dishing to fit on the steel point, *a*, and the stem of the socket extends up through the bail to a shoulder on the stem, and is there fastened by a nut on the top. *c* is a cap, or an inverted cup, with a hole on the top, through which the stem of the socket passes. The cap has a thread cut inside to match the thread on the spindle, and is screwed down to the shoulder bell, *e*, of the socket, *b*, which confines it to the point, *a*. This holds the stone to the spindle point effectually, and in order that the stone shall balance freely on the point, *a*, the hole in the cap, *c*, is made larger than the stem of the socket, *b*, thus the cap is no detriment to the motion of the stone, while it holds it down to the work with ease under the greatest speed or pressure required. At the lower end of the spindle, H represents a common bridge pot, with the oil box, *h*, made round. *l* is the steel point in the end of the spindle, and is fastened there by the set screw, S. There is a steel collar around the steel point, *l*, fitted and fastened in the bottom of the oil box by three set screws, P P P. Through the side of the oil box, down against the bevel edge of the steel collar, a shoulder turned on the steel point—just below the collar—prevents the point from lifting up through it. The step is fastened to the bridge tree with two wood screws or bolts. Thus the bridge tree is connected with the spindle, which is used as heft whenever it is required, and millers are not obliged to use a stone backed up high to obtain heft, nor would it run a four feet stone with the grinding surface reduced to three feet in order to obtain heft in the runner, for if the stone is reduced in size, so much the speed should be increased, in order that the small stone shall pass over the same amount in a given time. "Hence it is obvious," says the owner of the patent right, "that we save power by using small stone. First, because a part of the heft we use is stationary, and does not take power. Secondly, the stone is smaller, and grinds on a shorter lever. The third reason is, the furrows are of less draught, consequently grind easier and more even. Thus it will be seen that this is merely the old common spindle with a connecting locket attaching it to the bail, which renders it equally effective for raising or holding down the stone, and the socket is not subject to friction or wear as it revolves with the spindle and stone, making, when complete, the simplest method in use for driving small stones, and effecting a saving of power and expense."

Further information may be obtained by addressing Wm. Hendricks, of Wolcott, N.Y., who has given us some statistics respecting its operation and use, since the patent was obtained. It has been applied to twenty mills, and gives the best satisfaction. The first stone to which it was applied was a 30 inch, with very light grooves. It ground 2800 lbs. of corn meal for bolting in two hours, with ease, although it had only been recommended to grind 7 bushels per hour—not half the quantity it did grind."

The Reaper.

We are indebted to the Hon. John Wentworth for a printed pamphlet containing the argument of W. H. Seward, in the Circuit Court of the United States, Oct. 24th, 1854, on the trial of the case McCormick vs. Seymour & Morgan. Mr. Seward appeared for the plaintiff, and his argument is able and well prepared. The result of the trial was a verdict for McCormick for $7,750.

It occurs to us, that it is a perversion of the franking privilege on the part of M. C's. to circulate broadcast over the country, matter which is so entirely foreign to the business of Congress. Many worthy citizens of this great republic are this day suffering injury for the want of such easy facilities for circulating their advertisements and we insist that Congress shall not assume for capitalists what it denies by law to many others who deserve and need its assistance. Mr. Mc Cormick is abundantly able to do his own advertising, as much so as Wright, Green, Danford, Manny, Rugg, and other residents of Mr. Wentworth's State who are engaged in a laudable desire to sell reapers and mowers to the public.

New Motor.

The *Eastern Mail* (Waterville, Me.,) gives a brief description of a new motor in experimental operation, in that place, and which has been designed and constructed by F. B. Blanchard. The motive agent is steam gas and heated air combined, instead of simple steam alone. The steam boiler is 8 by 3 feet; the bore of the engine cylinder is 12 inches, the stroke 24. It has two air pumps of 10 inch bore and 12 inch stroke. The *Mail* states that Mr. Blanchard expects to obtain as much power by his combination engine with one fourth the fuel he would use in employing pure steam. The results of two experiments are given, but they afford no evidence of superiority. Mr. Blanchard will yet discover that his engine will have but a limited lifetime, and that it will prove inferior (taking all things into consideration) to an ordinary steam engine.

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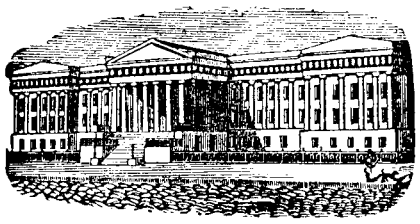

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from he United States Patent Office.

FOR THE WEEK ENDING MARCH 7, 1855.

CLEANING SISAL HEMP AND STRIPPING SEED FROM BROOM CORN—G. D. Allen, of Key West, Fla.: I claim the combination of the prongs, C, arranged substantially as described, with the spring levers, G G, or their equivalents, constructed and operated substantially in the manner and for the purpose set forth.

LIFE BOATS—John Allen, of New York City: I claim, first, a life boat composed substantially as described, of a frame and a flexible covering, and provided with inlet and outlet pipes and valves, so that when the flexible covering is closed up perfectly water tight, the action of the waves on the said flexible covering and the tossing about of the boat on the water will keep up a constant pumping action, and thereby supply fresh air to and discharge vitiated air from the interior.

Second, I claim the construction of the frame, substantially as set forth, of the two tubes, A A, and right and left handed screw, B, and the longitudinal ribs, b b, all combined and operating as described.

[A description of this invention may be found on another page.]

COOK STOVES—J. J. Anderson, of Beaver, Penn.: I claim the construction of the ellipsoidal oven in stoves, as set forth, arranged in contact at the front with the horizontally corrugated fire back and detachable ash box.

ARRANGEMENT OF THE SPRINGS ON WAGONS—Harmon W. Ballard, of Burlington, Vt.: I do not claim a spring wagon having solid bearings, to take the weight of the load when it becomes too heavy for the spring to bear, as this has been accomplished before in other ways.

But I claim the arrangement of the springs, as described, on either or both sides of the rocker, bolster or axletree of a wagon, cart, or other vehicle, as and for the purposes specified.

GUARDS FOR DOOR LOCKS—William Ballauf & Frederick Wurth, of Cincinnati, Ohio: We claim, first, the bit or case, c, and the bracket, k, adapted to the slot of an ordinary key hole, in combination with the cylindrical sockee, b, and tapering screw threaded spindle, a, substantially as set forth, adapted to the eye of the key hole, and which spindle, by means of a suitable key, l, as described, can be screwed within or unscrewed from the key hole, the rotation of the screw, by any other than the proper key, being prevented by the described tumblers, d, or their equivalents.

Second, the sliding and vibrating tumbler or tumblers, d, provided with a locking dent or lug, 5, catching within a notch, 4, in the spindle shank, and disengaged therefrom by the combined agencies of the channeled and sliding key, l, elevating pin or piston, i, longitudinal and T-slots, 6, 7, and stationary pins, g h, substantially as described, the tumbler on the withdrawal of the key re-locking by means of a suitable spring.

Third, in combination with tumblers, substantially as represented, the longitudinal notches, 4 4', extending on both sides of a transverse or eccentric channel, 10, around the spindle shank.

Fourth, the eccentric and parallel channels, 9 10 11, around the spindle shank and key stem; acting simultaneously upon both dent and spur of each tumbler, after the manner and for the purposes set forth.

Fifth, the tapering screw threaded and spirally scored spindle in this connection.

SAFE CATCH FOR BREAST PINS, &c.—E. C. Benyaurd, of Philadelphia, Pa.: I do not claim the application of a safe catch generally, for the purpose of holding the point end of the pin of a piece of jewelry.

But I claim the application and use of a safe catch constructed substantially as described, for the purpose of holding safely and securely the point end of the pin of breast-pins, cuff pins, chatelaines, or any other piece of jewelry requiring a catch and pin.

HAND CULTIVATORS—Nehemiah B. Chase & C. W. Saunders, of Wilkinsonville, Mass.: We are aware that a hand cultivator carried on wheels has been constructed with shares not guarded at the points, and having both a rotary and a lateral adjustability, therefore we do not claim these features.

But we claim the arrangement of the knives, A A, upon the frame, so as to be adjustable in an oblique direction, and also reversible, as set forth.

PROCESSES FOR MAKING BREAD—Charles Crum, of Hudson, N. Y.: I claim the suffering the dough to pass into the acetous state, then reviving it, by the working and breaking into it fresh dry unfermented flour and the subsequent process of cutting, piercing, raising in the open air, and baking in an open oven or an oven freely ventilated, and I claim this invention in its application to wheat flour or any other flour of which bread is made.

TREATING FISH FOR MANURE AND OIL—Rene C. Demolon and G. A. C. Thurneyssen, of Paris, France. Patented in France, Jan. 13, 1851: We claim the reduction of fish or the remains of fish to a dry powder for manure and other purposes, substantially as specified.

HARNESS SADDLE TREES—Julius C. Dickey, of Saratoga Springs, N. Y.: I claim the shank piece or prolongation of the nut, c, for the purpose of enabling me to place the turrets higher upon the yoke where they properly belong, and to prevent the reins passing through them, from being too much spread at that point, as they would be if the turrets were placed at the joint which is limited in its position, substantially as set forth.

MACHINE FOR CUTTING MITER AND OTHER JOINTS—F. A. Gleason, of Rome, N. Y.: I claim, first, the rotary dovetail groover, as described, or its equivalent.

Second. I claim the miter saw, F, with the clearing knife, b, fixed upon the same chuck and concentric with the groover; also the manner of fastening the saws, as described.

Third, I claim the tonguing stock with its saw and bevel cutter or their equivalents: also the manner of attaching it to the head stock.

Fourth, I claim the carriage with its movable bed, which may be adjusted to any angle required.

DOUBLE-ACTING HYDRAULIC STEAM PUMP—R. B. Gorsuch, of New York City: I claim effecting a water pressure upon the suction end of the pump plunger, M, in direct acting steam pumps, at or near the completion of the stroke, without diminishing the resistance against the forcing end of the plunger, in the manner, as shown, or in an equivalent way, for the purpose of closing the suction valve, a, filling the vacuous space in the pump chamber preparing the force valves for opening and acting conjointly with the steam pressure upon the piston, B, whereby the steam valve, D, is operated with precission whatever may be its velocity.

[A description of this pump may be found in No. 13, present Vol. SCI. AM.]

AUGER HANDLE FASTENING—G. H. Hubbard, of Shelburne Falls, Mass.: I do not claim the ferrule, B, which has been previously employed.

But I claim the ring, C, constructed, arranged and operating in the manner and for the purpose set forth, or other manner substantially the same.

SODA WATER APPARATUS—M. F. Hyde, of Burlington, N. J.: I claim the porous distributor or its equivalent, arranged and operating as described.

COAL SCREEN—George Martz, of Pottsville, Pa.: I claim the improvement in coal screens, by which the coarsest coal is separated from the finer sorts and discharged at the mouth of the screen, whilst the finer sorts of coal are carried forwards and separated the one from the other in the usual manner.

MILL FOR GRINDING AND BOLTING SUMAC—S. W. Powell, of Tuscarora Valley, Pa.: I claim the slotted hollow cylinder having a shaft armed with spirally arranged teeth revolving within it, constructed and arranged in the manner and for the purpose set forth, and disclaiming all other parts not claimed.

STEERING APPARATUS—Jesse Reed, of Marshfield, Mass.: I claim combining with the divided nut the adjustable guide and guard rails, substantially in the manner and for the purpose set forth.

I also claim the supporting of the pedestals upon the stanchions by means of long pins or studs passing through oblong slots in the pedestals, and into said stanchions, for the purpose of allowing the pedestals and several parts connected therewith to move fore or aft, up or down to accommodate themselves to any rising or falling, or springing, or bending of the rudder post, substantially as described.

COMBINATION OF AN AIR CHAMBER, WATER COOLER, AND FORCE PUMP IN SODA FOUNTAINS—N. D. Robins, of Edinburgh, Ind.: I do not claim the water cooler, the air chamber, the force pump, the connecting pipes, nor the making of soda water with chemicals under atmospheric pressure

But I claim the apparatus, as constructed, of a combination of a water cooler, A A, an air chamber, C C, placed within A' A', and force pump, B B, and made to operate substantially as specified.

RAILROAD CAR COUPLING—Edward Rice, of Canandaigua, N. Y.: I claim the arrangement of the movable guiding mouth, D, the catches, G G, the inclined planes, F F, the embracing band, H, and the lever, E, with each other and with the draught bar, A, in such a manner that the coupling bar, B, will be self-caught and retained when brought in contact with said parts, and by which it can also be readily liberated when the cars are in motion, substantially as set forth.

In combination with the spring catches, G G, and the movable mouth, D, of the coupling apparatus, I also claim the movable heads, C C, of the coupling bar arranged substantially in the manner and for the purpose set forth.

FIRE PLACE—John W. Smith & John S. Gallaher, Jr., of Washington, D. C.; Having described the construction, nature, and principles of our improved economical fire place, we claim the adjustable perforated blower pipe with perforated collar, as described, arranged with the detachable fire place; the latter having a perforated throat and double funnel ventilator: together with the valves, diaphragms, partitions, smoke conduit pipes, as constructed and arranged with the recess casings, forming air chambers and gas receiving apartments, substantially as described, and for the purpose set forth.

MACHINES FOR MAKING CANDLES—John Stainthorp, of Buffalo, N. Y.: I claim, first, the employment of the piston, D D, formed at their upper ends into molds for the tips of candles, in combination with stationary candle molds, to throw out the candles in a vertical direction, substantially as set forth.

I do not claim the use of clasps, separately considered; but I claim, secondly, the combination of the rack, tip bar, and clasps, constructed and arranged substantially as described and for the purposes specified.

CONSTRUCTING SAW PLATES, AND SETTING TEETH THEREIN—Linus Stewart, of Washington, D. C.: I claim the improved mode of constructing saw plate, and fastening ot the bits therein, as described, that is, the bits shall be so made and arranged with projections on each side equal to the set of the saw and fastened therein with a key or other known modes of securing the same.

MACHINES FOR STUFFING HORSE COLLARS—W. L. Whittaker, of Cumberland, Md.; I am aware that a hinged rack inside of a hopper has been used, which the inventor states can be moved up or down to change the quantity which the stuffing rods are to carry into the collar. It is not clear how it was done, but it differs from my plan, which keeps a regular and unvarying quantity at the spot which the rods pass through. It is deemed new, therefore, in its special application.

I am also aware that a collar has been stretched while it was being filled from one end only. This is not any part of my invention, because the same difficulty arises as to its susceptibility of having the straw lapped.

I claim, in combination with the hoppers, the weighted racks for bringing down a regulated quantity of straw to take the place of that carried into the collar by the stuffing rods, as set forth.

I also claim stuffing the collar simultaneously from both ends by means of stuffing rods, which travel past each other at the center of the collar, by which means the straw is evenly lapped at the center as at the ends, substantially as described.

ARRAGEMENT OF EXHAUST PIPES IN LOCOMOTIVE ENGINES—John Williams, of Dunkirk, N. Y.: I claim surrounding the exhaust pipes, e e, with cylinders, a and d, the outer one connected by wings, b b, with the sides of the smoke arch, for the purpose of economizing fuel and power of the engine, as well as equalizing the draft through the lower flues of the boiler, substantially as set forth.

EXTRACTING STUMPS—W. W. Willis, of Orange, Mass.: I do not propose to claim either the draft hook, the shears, or the pulley by itself, as neither can of itself, nor any two of them perform the functions for which, after much thought and many experiments, I discovered that all three acting in connection, were indispensable.

I claim the combination of the draft hook, R, shears, H, and pulley, N, substantially in the manner and for the purpose set forth.

ARRANGEMENT OF DESKS IN SCHOOL ROOMS.—Virgil Woodcock, of Swanzey, N. H.: I claim the diagonal arrangement of the seats and desks, as described.

[An engraving of this invention will embellish our columns next week.]

APPARATUS FOR PURIFYING ILLUMINATING GAS—D. H. Chamberlain, of West Roxbury, Mass. (assignor to Henry Woodward, of Boston, Mass.): I do not claim a gas purifying apparatus composed of a closed cistern, provided with ingress and egress pipes, and an annular float having an inverted concentric groove or chamber and numerous passages leading therefrom, whereby the gas suffered to flow into said chamber, while the float is resting on a purifying fluid is caused to raise the float so as to escape from its chamber, and pass over the surface of the liquid in numerous streams, the float having no rotary movement, whereby it is caused to stir and agitate the cleansing liquid.

But I claim an improved gas purifying apparatus arranged within the closed cistern, and made to distribute gas in contact with the liquid therein, and to be put in rotation by the gas, so as to stir up and agitate the said liquid, as specified, the said apparatus consisting of a wooden or other proper float, E, and a separate gas receiving and discharging apparatus, composed of the disk, F, the tube, L, and its receiving and discharging scroll or the equivalent therefor, such a mode of constructing the agitator having important advantages over a simple float having an annular chamber formed within it, and made while resting on a purifying liquid to receive gas, and to be raised by it, and so as to permit it to escape in numerous thin streams and over in contact with the liquid.

GRAIN AND GRASS HARVESTERS—John H. Manny, of Rockford, Ill., and Henry Marcellus, of Amsterdam, N. Y.: We claim supporting the stalks of grass or grain to be cut by means of rods or wires on one side of the sickle, while they are supported on the opposite side by means of the edges of the finger in the usual way, substantially as set forth.

We also claim the construction of the shanks or rear part of the fingers, in such form that the shanks will pass or overlap each other and mutually support each other and stiffen the finger bar, substantially as set forth.

We also claim the manner described of connecting the rods to the fingers and to the cutter bar, and of adjusting them so as to support and brace the point of the finger with such degree of force as may be required, substantially as set forth.

RE-ISSUE.

GRAIN AND GRAIN HARVESTERS—John H. Manny, of Rockford, Ill. Patented Oct. 17, 1854; ante-dated June 15, 1854: I claim making the outside or dividing finger hollaw, so that while it affords sufficient room for the play of the end of the sickle, the bearing of the latter therein will not be so long as to afford a lodgment of grain and grass, &c., in sufficient quantity to clog it.

GRAIN AND GRASS HARVESTERS—John H. Manny, of Rockford, Ill. Patented Oct. 17, 1854; ante-dated June 15, 1854: I claim the combination of the reel for gathering the grain to the cutting apparatus, and depositing it on the platform, with the stand or position for the forker, arranged and located as described, or the equivalent thereof, to enable the forker to fork the grain from the platform and deliver and lay it on the ground at the rear of the machine, as described.

GRAIN AND GRASS HARVESTERS—John H. Manny, of Rockford, Ill. Patented Oct. 17, 1854; ante-dated June 15, 1854: I claim the combination of the fence to compress the grain against, at the outer end of the machine, and guide it while sliding off the platform, and the position, stand, or seat for the forker at the inner end of the platform with the platform, substantially as set forth.

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129 iron steamships were launched in the Clyde in 1854.

The Age of the World.

MESSRS. EDITORS—Judging from remarks of your own appended to articles upon the "Age of the World," which have appeared in late numbers of your paper, you favor the *biblo-geological* view as to that age, namely, the view that the six days of creation spoken of in the first chapter of Genesis, may mean the six million ages (or the six indefinite periods, however long) indicated by geology as the time taken to complete that creation. Let us *look into* rather than merely *glance at* the account of those six days.—

"In the beginning God created the heavens and the earth. And darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters.—And God said, Let there be light; and there was light. And God divided the light from the darkness. And God called the light Day [then, as now, the time during which the light of the sun was upon one hemisphere of the earth,] and the darkness he called Night [then, as now, the time of the absence of the sun's light from the same hemisphere]. And the evening and the morning was the first day"—that is, from the commencement of the first "Night," which commencement was "in the beginning," to the expiration of the first "Day," which was the close of the first period of sunlight upon the earth, was one day—one revolution of the earth upon her axis. You say: "no, such is not a proper rendering of the passages. The 'Day' spoken of could not have meant one period of sunlight upon one half of the earth; because the sun was not created until after the close of the third "evening and morning." Well, supposing it admitted that your objection is valid, then it devolves upon you to explain in what, exactly, the process of dividing the light from the darkness before the sun was formed, differed from the same process after the sun's formation; also to give the precise meaning of the *evenings and mornings* before and after such formation. Will you do your readers the favor of answering the requirement.

G. M. EVERETT.

Phillips, Me., Feb. 26th, 1855.

[It does not devolve upon us to explain "the process of dividing the light from the darkness," but upon those who assert that the first day named in Genesis was one of our ordinary solar days, and yet assert that the sun was not created for some days afterwards. Our correspondent mistakes our views if he supposes that we have imbibed positive opinions respecting the geological dispute relating to the great age of the world, as being in harmony with or opposed to the common belief respecting the Genesis account of the six days of creation. We have signed the *statu quo* for the present, waiting for more scientific light; and it does not devolve upon us at any time to prove a negative. We said, that Mr. Mean's argument against the solar day theory, for the first two days of creation, was incontrovertible. We speak for ourselves, because we cannot gainsay it. We all know so little about the ways of the Infinite Creator in making our world, that it becomes us to be very modest.

Hugh Miller, who is an advocate of the interpretation of the days mentioned in Genesis being great periods of time, advances scientific facts, as proof of this, against which we have nothing to set up, nor have we seen anything to meet them. Thus, the present coast line in Scotland has not changed since A. D. 140 (this is positive,) and that, since this is so, the "old coast line" must have existed about four thousand years, thus exhausting the common Hebrew chronology. "And yet," he says, "what a mere beginning of geologic history does the epoch of the old coast line form. Not a single shell seems to have become extinct during the last six thousand five hundred years. The shells which lie embedded in the subsoils beneath the old coast line, are exactly those which live in our seas."

He tells us that he has found shells above this old coast line on hights varying from two to nearly fourteen hundred feet, and these not shells like those of Britain, but the same as those found now on the shores of Iceland. Some of these he found six miles from the sea, on the tops of dizzy crags. He thinks that owing to some change in the Gulf Stream, nearly all Britain was once submerged in a sub-arctic ocean, and that it existed as a scattered archipelego of wintry islands. And yet there are evidences that, at a remoter period still, Britain was above the water, existing as a larger country, and enjoying a tropical climate. Then the elephant, the rhinoceros, the hippopotamus, the hyena, and the tiger infested the British jungles. In the course of thirteen years, two thousand elephants' grinders and tusks have been gathered from the sea bottom of the Norfolk coast. These elephants must have belonged to a number of generations, and roamed over a vast area. Those great changes which have taken place at various periods in the history of our globe, have left behind them such testimony of its great age (reasoning from a certain unit of history, the present coast line,) that we cannot find a single argument nor fact to combat them with.

Ether and Steam.

La France, a large French steamship, has been fitted up with M. de Trembley's combined ether and steam engines. In a voyage from Marseilles to the Black Sea, it made nine knots per hour, but with what economy of fuel we have not been able to learn. As described on page 405, Vol. 8 SCIENTIFIC AMERICAN, the exhaust steam is employed to heat ether in a separate vessel into vapor, which is admitted to work a piston in a duplicate cylinder, [like a Wolfe engine,] where it is afterwards condensed by surface contact, and the same ether used over and over again. It is expected, and has been asserted, that such a combination must effect a great saving in fuel. We cannot see how this can be, and we believe it will so turn out. The boiling point of ether is no doubt very low—96°—but its vapor is dense in proportion to the difference of its latent heat to that of water, hence we cannot see how it can be more economical than steam alone. With all the care exercised, it has been found impossible to prevent the escape of the ether vapor, which makes its use both dangerous and disagreeable.

Obituary.

Robert Mills, Civil Engineer, died at his residence, Capitol Hill, Washington City, on the 5th inst. He was a native of Charleston, S. C., but had resided for a number of years in Washington, and was the planner and superintendent of a number of the public works of that city. He possessed many sterling qualities, and was beloved by a large circle of acquaintances. He possessed a very original mind, and was distinguished for his practical abilities and mechanical genius. He was a frequent correspondent to the SCIENTIFIC AMERICAN, and on page 369 is an illustrated view of a very original plan proposed by him for the Pacific railroad. He was architect of the National Monument, and the designer of other public edifices. It is reported that he was ill treated by the "Red-tapists" at Washington, with respect to some of his designs, and this so affected his mind, as to have been the cause of his death. *Memento Mori.*

Railways in Virginia.

The yearly railway list of the *American Railway Times* gives 21,310 miles completed in the United States, and 16,975 in course of construction. Of this sum, 837 miles of finished road are assigned to Virginia. Our usually correct cotemporary is here mistaken. It could hardly be expected indeed to bring up the figures of so many lines, in constant course of extension, to a fixed day with absolute precision. According to our reckoning, Virginia had in operation, on the 1st of January, 1855, one thousand and thirteen miles of railway, not including the Baltimore and Ohio road in this State; besides some eight hundred under contract.—[Winchester Virginian.

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TO CORRESPONDENTS.

K. L., of Mass.—Were we to publish your question we hould be smothered with parchment: we think your improvement of the dissected map is new and patentable; it could be molded of a composition of gutta percha and whiting. Your subscription expires with No. 44.

D. L., of N. J.—Are you sure that a windmill will propel a vessel directly against the wind! Have you ever seen one do this?

C. J. H., of N. Y.—We cannot tell you how to join your broken vulcanized india rubber valve firmly; if it were mere rubber, heat would cement it. Two ounces muriate of ammonia to one hundred cubic feet of water, would be sufficient; use oak saw dust in very small quantities, and in all likelihood scale will be prevented and no harm done.

E. J. C., of Miss.—If you use wood, get a large common box stove for the church—the larger the better; if coal, get a large circular heater, about five feet high, made with Russian sheet-iron outside, cast-iron sole, and well lined with fire brick: we cannot give you advice about the best cooking stove. The pulpit and seats of light oak graining, look well and last for years. You must try and manufacture your own shoes: those who send you bad ones do not deserve to be dealt with any longer; we have the same trouble here.

J. C., of N. Y.—Use fine emery and tripoli for polishing lenses; fine whiting is also employed. You must acquire the proper motion by practice.

J. S., of Ill.—Your alleged improvement in rotary steam engines has long since been anticipated, and there is now not the slightest chance for a patent; besides, the invention is worthless.

G. W. Z., of Ohio—The model of your boot crimp has come to hand.

J. A. W., of Iowa—Your seed planter appears to be novel, and we advise you to send us a model for a more thorough examination; the sketch is very indifferently prepared.

T. G. M., of N. H.—Your device for regulating the quantity of water in steam boilers, is an old invention, patented more than twenty years ago; the same principle has been applied not only with a reciprocating piston, but with a rotating cylinder, and also with a rotating disk.

L. B. B., of Pa.—Lead pipe will corrode in moist ground rich with animal matter: we do not know of anything to prevent them from corroding; we never saw galvanized lead pipe; if you could imbed them in dry sand they would not corrode.

W. H. R., of Ohio—It would be perfectly consistent for us to publish your article, if it contained any scientific data or argument against any theory, or in favor of any one; but you seem to be well aware of its defect in this respect.

S. G. C., of Pa.—There is no work on that class of engineering that we could recommend to suit you.

C. M. M., of Min. Ter.—We believe the concavo bullet to be the best. Chapman's work on the American Rifle will give you the proper information on the twist of rifles; the twist has nothing to do with Sharp's rifles.

W. W. K., of N. Y.—The paste of letter stamps is made of dextrine, formed by exposing starch to a high temperature—about 400 deg. Fah.; or by boiling starch with a very minute quantity of sulphuric acid.

R. M. C., of Texas—The experiment with steam on the principle of the Barker Mill has been fairly tested on a locomotive near this city; it was too expensive, as was demonstrated by scientific data, before it made a single revolution. You are right about hot air, as it relates to its temperature; we have said that it only could be used economically at a very high temperature. The metal and packing will not allow of this.

J. H S., of Md.—Your suggestion in regard to an index for each number is worth heeding, but we find very little time to attend to its weekly preparation; perhaps in our next volume we may adopt it.

A. H., of Va.—"Scott's Little Giant Mill," is sold by J. P. Merriam, of Sandusky, Ohio.

L. R., of N. Y.—You ask if we think a column and a half of Spiritual Philosophy is more interesting to our readers than a few items about static power; we will be our own judge in such matters.

A. S., of Geo.—The operation of the propellers as proposed by you would be disastrous.

J. S., of Wis.—We have received the description of your life-preserving mattrass; a mattrass constructed of india rubber, and filled with hair, cork, or any light substance, is well known and there is now no chance to secure it by patent.

E. T., of Ohio—Is requested by James Britton, of Hartford, Conn., to address him upon the subject of portablegas works.

O. C., of S. C.—The articles upon electro-plating were published in Vol. 6. Don't know the price of Smee's work, it is sold by John Wiley, of this city.

Some unknown correspondent has sent us a drawing of a churn almost equal in extent to a steam engine; the simple process of churning can be carried on without so much wasted machinery.

W. K. P., of ——.—Your method of getting up the speed on locomotive wheels is old and not a good one; the wings on the surf boats would not stand the severe dashing of the waves.

J. H., of N. Y.—The power of an engine is the steam; that is its amount; a five inch bore and twelve inch stroke is a good size for a two horse engine; you should have two cubic yards of water, but it should have nearly as much space for steam. The grate surface should be two square feet.

A. Z., of Baltimore—We do not remember to have ever seen your article on calculating the weight of iron castings from the weight of the pattern; we would like to get the rule; your article will appear next week.

A. L., of Ct.—We have never heard of the decision of the Circuit Court in relation to Batten's Coal Breaker being reversed by the Supreme Court. If a thing is described in a patent, and not claimed, and the same suffered to go into public use for two years, we suppose it becomes public property.

L. D., of Pa.—We have received Mr. Robinson's withdrawal and forwarded it to the Patent Office, as you request. Instead of entering you for six months subscription, we have entered you for one year, which the $20 will pay for, with good engravings.

T. & R., of Mass.—Etching engravings is a very old art, but if you have a plan that has never been known or used before, it is patentable, most certainly.

J. B. G., of R. I.—We note your remark in regard to taking artificial flowers to Paris; we are unable to advise upon such a subject; if you can make them "look and smell," like the natural flower it is a step ahead of anything we have ever heard of before in the same line.

C. B. B., of Ill.—As soon as we receive the model of your mowing machine we will examine it and write you: be particular in giving a description of the supposed improvement.

A. E., of Ohio—The $30 named was for the government fee. Our charge will be either $25 or $30. Can't tell which till we see the model.

J. S. B., of Ct.—Your invention is one of such importance that perhaps you had better keep it a profound secret until you can raise the funds necessary to secure a patent.

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J. H. C., of N. C.—You can have the "Dictionary of Technical Terms" sent by mail; you can freely use cast-iron pulleys on cotton gins.

Money received on account of Patent Office business for the week ending Saturday, March 10:—

K. & F., of Mass., $25; C. & L., of O., $30; H. W. O., of Ct., $30; S. M., of Ill., $40; L. M.W., of N. Y., $27; P. M., of Ill., $15; S. & R., of Vt., $10; W. & P., of Ct., $25; A. B. C., of N. Y., $20; A. W. F., of Pa., $32; L. & T., of Pa., $30; J. & O., of Mass., $30; J. J. T., of Pa., $30; H. & M., of N. Y., $25; S. S., of Mich., $35; J. W., of Me., $50; D. & J. R., of Pa., $30; J. S., of N. Y., $55; C. L., of Pa., $30; L. C., of Ct.; $10; J. R., of N. Y., $40; G. R., of Mass., $60; A. B., of Ct., $25; J. W. A., of N. Y., $30; J. Y. S., of Pa., $10; R. H. G., of N. Y., $45; J. H. M., of Pa., $25; J. W., of N. Y., $30; M. F. C., of N. J., D. McA., of Ct., $25; C. N. W., of N. C., $25; J., B. T., N Y., $25; R. D., of Pa., $20; P. B., of Conn., $30; M. & C., of Ct. $30; T. A., of Ala., $30; D. T., of N. Y., $30; T. J. B., of Ct. $35; W. W. of N. Y., $25; W. & P., of N. Y., $35.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, March 10:

K., & F., of Mass.; L. M. W., of N. Y.; T. J. B., of Ct.; P. M., of Ill.; A. B. C., of N. Y.: W. & P., of Ct.; A. C. B., of Ala.; H. & M., of N. Y.; W. W., of N. Y.; D. McA., of Ct.: A. B., of Ct.; A. B., of N. Y.; J. B. T., of N.Y.; J. & C., of Mass.; C. N. W., of N. C.; D. T., of N. Y.; G. T., of O.; J. H. M., of Pa.; W. J. S., of N. Y.

Important Items.

PATENT LAWS, AND GUIDE TO INVENTORS—Congress having adjourned without enacting any new laws pertaining to applications for patents, we have issued a new edition of the old laws, which may be had at our counter or sent by mail. This pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office Price 12½ cents per copy.

MODELS—We are receiving almost daily, models of inventions which have not the names of their inventors marked upon them. This usually prevents us from taking any notice of them whatever. We shall esteem it a great favor if inventors will always attach their names to such models as they send us. It will save us much trouble, and sometimes prevent the model from being mislaid.

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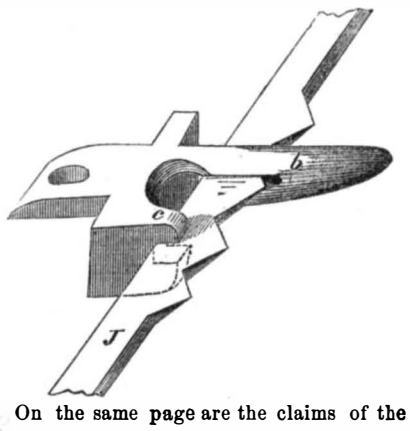
Science and Art.

History of Reaping Machines.—No. 23.

On the 30th Aug., 1853, F. Nishwitz, of Williamsburgh N. Y. (now a part of Brooklyn,) obtained a patent embracing two claims (see page 3, Vol. 9, Sci. Am.,) but from which no proper idea can be obtained of the improvements. These consist in a peculiar construction and arrangement of the cutters, and the manner by which the grain is laid in proper order on the ground after being cut. The cutters are placed in pairs in a spiral curve round a shaft, and being set at right angles to it, are carried round as the shaft rotates, cutting the grain in their revolution. Directly behind the shaft is the front board of the machine, on the upper part of which are secured a series of painted fingers, slotted to receive the cutters as the shaft rotates, and they are set at such an angle that the grass or grain is bent in a suitable direction for the cutters to operate with certainty. The grass or grain on being cut, falls against a number of belts provided with spikes, which pass around flanged pulleys, carry the grain, and then deposit it upon curved guides, which lay the butts of the grain stalks towards the machine as they fall upon the ground.

Philo Sylla, and Augustus Adams, of Elgin, Ill., obtained a patent on the 20th of September, 1853, embracing three claims, two for the method of allowing the sickle and bar to vibrate in cutting grass on uneven ground, and the third for the stands of binders, to allow them to stand lower than the horizontal platform, and to allow them to build the sheaves with greater ease, (see claim, page 19, Vol. 9, Sci. Am.) On the 8th of November, same year, a patent was granted to S. S. Allen, of Salem, N. J., covering four claims, all relating to the cutting gear; three relating to the balancing of the cutter bar and blades with the driving wheel, &c., and the fourth embracing a roughened surface on the under side of the cutter blades, and the upper side having a shear-cutting edge, to prevent choking. An oil box was also attached to the cutter bar, (see claims on page 75, Vol. 9, Sci. Am.) On the 22nd of the same month, a patent was granted to William Pierpont, of Salem, N. J., embracing hanging the cutter blade at each end to a crank to give a peculiar draw cut to the cutter, (see claim on page 91, Vol. 9, Sci. Am.) On the 13th of December following, a patent was obtained by J. E. Nesen, of Buffalo, N. Y., (which was also secured by patent in England,) embracing three claims, one for receiving the grain on a revolving belt, having an intermittent motion to receive grain in quantities of bunches, and carry them to the binding hooks; also gathering the grain in bunches by binding hooks; and lastly, the combination of the binding hooks and intermittent endless apron, (see claim on page 115, Vol. 9, Sci. Am.) On the 20th of same month, J. E. Brown, and S. L. Bartlett, of Woonsocket, R. I., obtained a patent containing five claims, for a rotating edged knife, to cut both ways, and a method of operating it, (see page 131, Vol. 9, Sci. Am.) On the same page are the two claims of a patent granted to Uriah H. Goble, of Springfield, Ohio. One embraces making the driving wheel with a conical tread, to counteract the tendency of the machine to run into the uncut grain, to avoid side draft, and balance the machine. The other embraces hinging the platform immediately in the rear of the cutters, and giving it a rising and falling motion, by a rotating cam and lever (easily understood,) to conform to the motions of the reel or rake to retain or facilitate the discharge of the cut grain in bunches from the platform. Figure 48 is a perspective view of the cutter bar and the guard fingers on Mr. Goble's machine. A space is left entirely around the cutter bar, when it passes through the guard fingers, this space being enlarged at the rear of the bar, and the bar is supported in guide boxes placed between the fingers, to prevent clogging. *b* is the guard finger with its opening through the cutter; J is the cutter bar; *c* is a guide box. The space is so wide behind the cutter bar, that any grass or grain will drop out if it gets in.

Fig. 48.

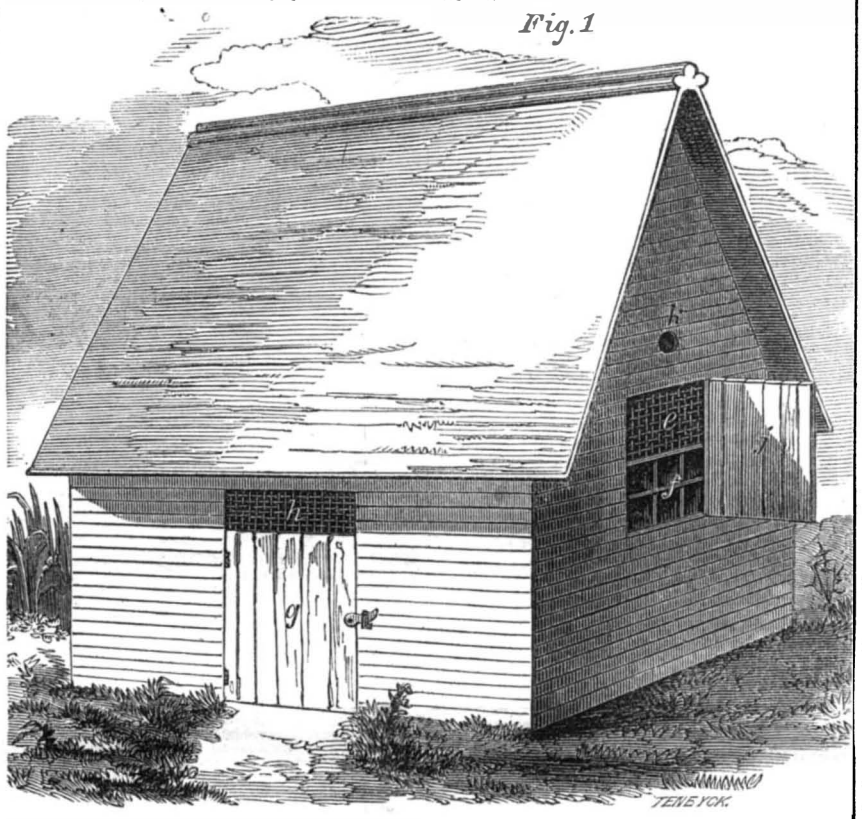


On the same page are the claims of the patent granted to the brothers W. & T. Schnebly, of this city, old harvester inventors. One embraces a mode of regulating the length of the cutter stroke, the second the making of hollow guard teeth, each in a single piece, and the third a self-acting rake with jointed fingers.

On page 155, Vol. 9, Sci. Am., are sixteen claims of a patent granted on a harvesting machine to P. H. Watson, and E. S. Renwick, of Washington, D. C. The patent is ante-dated June 6th, 1853, was omitted in the patent list of Dec. 6th, and was issued with the list of Jan. 10th, 1854. The object of the improvements is to cut, rake, tie the grain, and deposit them in tied bunches, all automatically. The machine is very complicated. We have never heard of its being used; but it is said to be very ingeniously devised.

IMPROVEMENT IN GRANARIES.

Fig. 1



The annexed engravings are views of an improvement in granaries, for which a patent was granted to Ebenezer Ford, of Spring Cottage, Miss., on the 24th of last October.

The nature of the improvement consists in erecting a building having double walls and double floors, furnishing the same with double partitions, the walls, floors, and partitions being filled in with salt, in order to prevent the attacks of insects.

Figure 1 is a perspective view of the granary, and figure 2 is a horizontal section of the same.

a is the flooring; *b c* are compartments; *d* are doors; *e* a wire gauze; *f* are windows; *g* is the door; *h* is wire gauze on the same; *i* are partitions; *k* the smoke hole; *l* are the walls.

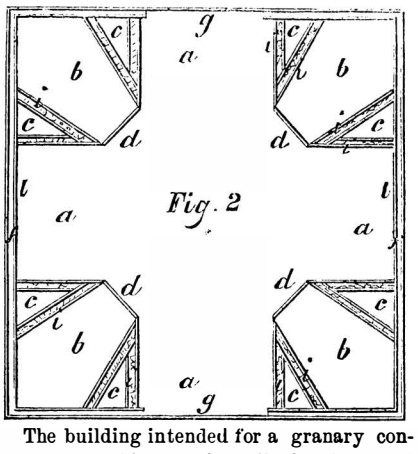


Fig. 2

The building intended for a granary constructed on this plan is built in the usual manner, except that the walls, *b*, are made double, one side of the other, the space between being filled in with salt. The partitions, *i*, are so constructed in the same manner, so that between the different compartments, *a b c*, there are double partitions containing a filling of salt. When the granary is finished and ready for use, the floor should be saturated with salt brine. The house is now to be smoked by the introduction of a stove pipe, through the hole, *k*, the pipe being connected outside with an ordinary stove, the smoke being carried through the hole, *k*, directly into the interior of the building—sawdust, or any kind of wood used in smoking meat, will answer. When the house is being smoked the doors and windows should all be closed, but in clear weather the windows may be opened for ventilation. The grain may now be put in, and if in bulk it should be thrown up against the walls, slanting down towards the corners of the garners. The partitions between the compartments are high where they join the walls of the building, and slant down quite low towards the center of the same, which permits the introduction of light in the various parts. The house should be smoked at least once a month with sulphur, and likewise with wood and sawdust during cloudy or sultry weather, which are the periods when the weevil and other insects generate. If no insects be carried into the granary with the grain, none will appear during the season—should any have been carried in, they will perish, and not generate any more. The object of the gauze at the top of the doors and the windows is to admit currents of cold air when an opportunity occurs. Salt is a substance very destructive to insects. By the employment of smoke in the manner described, any superabundant moisture occasioned by the use of salt will be carried off, and the condition of the granary may be at all times properly preserved.

The claim is as follows:—I am aware that salt has long been used as a filling between the timbers of ships, and also between the walls of ice houses; and therefore to such devices I make no claim. But I claim the mode herein described for making granaries, having the walls, floors, and partitions filled in with common salt, in the manner substantially as set forth.

More information may be obtained by letter addressed to the patentee at Spring Cottage, Marion Co., Miss.

New Steam Mill.

The Worcester *Transcript* (Mass.) speaks in high terms of a new steam engine built by the Lawrence Machine Shop Co., of which Gordon McKay is agent, and Mr. Hadly Superintendent, for Mr. Merrifield, of that city. It is a beam engine with a cylinder 40 inches bore, and six feet stroke, and is the largest in that section of country. It is a condensing engine, and stated to be *low* pressure.

Steamship Arabia on Fire.

The steamship *Arabia*, the best of the Cunard line, which has been employed for conveying French troops to the Crimea, took fire at Balaklava, but it was soon extinguished. It was lying alongside of a ship containing 1000 tuns of gunpowder. Had it blown up, there would have been a scene.

LITERARY NOTICES.

Coachmakers' Guide—The March number of this excellent work, by C. W. Saladee, Columbus, Ohio, contains two plates of figures, illustrating a fashionable "Gipsey Top Buggy," a "City Calash," and a "Farmer's Carriage." It also contains a number of wood cuts, illustrating improvements in carriages, harness, and the art. The illustrated history of wheel carriages is continued; it is very interesting.

The Nautical Magazine—The March number of this useful Magazine, by Griffiths and Bates, No. 115 Nassau st., this city, is illustrated with a plate of the "Six Days Steamer," or the "William Norris," which was to cross the Atlantic in six days. It contains an excellent article on Capt. Whittaker's method of propulsion, by substituting side screws for paddle wheels, as noticed in the Sci. Am. three weeks ago.

The Medical Examiner, for March, published by Lindsay & Blakiston, Philadelphia, and edited by Dr. Hollingsworth, contains a number of very excellent articles: one on the "Medicinal Effects of Saleratus," which criticises Dr. Alcott's article in the *Boston Medical and Surgical Journal*, on its dangerous use, as being the cause of excessive mortality among American children.

The Eclectic Medical Journal, for this month, conducted by Drs. Buchanan and Newton, of Cincinnati, contains a long and interesting article on the cause, nature, and prevention of Cholera, by Prof. Knapp.

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